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From the Desk of
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July 16, 2018

Oregon Department of Environmental Quality
Eastern Region, Bend Office
Attn: Mr. David Anderson
475 NE Bellevue Drive, Suite 110
Bend, OR 97701

VIA Email. anderson.david@deq.state.or.us

SUBJECT: Class 3 Permit Modification Request for Incorporation of Organic Recovery Unit 2 Tanks into the Chemical Waste Management of the Northwest Hazardous Waste Permit ORD 089 452 353

Dear Mr. Anderson;

I have reviewed the May 30, 2018 email notification regarding the subject Class 3 Permit Modification regarding CWMNW's request to install a second Organic Recovery Unit (ORU-2). This unit is actually a thermal desorption unit (TDU) that provides thermal treatment of hazardous waste materials and combusts a portion of the waste material in an associated thermal oxidizer (TO). This letter presents my comments on the permit notice. I am also providing comments on CWMNW's permit modification documents as it relates to this matter.

I request that a public hearing be scheduled to provide for public comment on this permit action. This is especially appropriate considering the large difference between the draft permit conditions and what are required for RCRA permitted hazardous waste thermal treatment as proposed by CWMNW.

I am trying to secure the actual permit so as to be able to provide specific comments on the permit language. Your staff is working to provide the permit document, which I understand is approximately 25 pdf files that are too large to email. I hope that you can accept my comments in this letter in advance of specific comments regarding the appropriate permit language to regulate the operation of a TDU that combusts all or a portion of the vent gases resulting from the thermal treatment of hazardous waste.

The EPA has clearly determined that a TDU such as proposed by CWMNW is fully regulated hazardous waste thermal treatment, subject to RCRA permitting under 40 CFR Part 264 Subpart X as a "Miscellaneous Unit." This is the case even for units that are engaged in a legitimate recycling activity, such as the recovery of oil from oil bearing hazardous waste from petroleum refining, production and transportation practices. Furthermore, the unit is subject to compliance with the emission limits of 40 CFR Part 63 Subpart EEE (i.e. MACT EEE). Exhibit 1 provides EPA letters communicating these requirements.

Both the Permit notice and the CWMNW standalone attachments 22 and 23 lack any requirement or commitment for the TDUs to meet the emission limits that are required to be met for hazardous waste thermal treatment that is permitted under the Miscellaneous Unit standards of 40 CFR Part 264 Subpart X. Under these statute, and specifically detailed in multiple EPA determinations since 2010, the TDUs must be required to meet the emission limits from 40 CFR Part 63 Subpart EEE. The Draft permit should be revised to specifically include these requirements and establish that the exhaust gases from the TDU thermal oxidizer meet promulgated emission limits under 40 CFR 63.1219(b), including meeting specified emission limits for dioxins and furans, mercury, semi-volatile metals (cadmium and lead), low-volatile metals (arsenic, beryllium and chromium), carbon monoxide and hydrocarbons, hydrogen chloride and chlorine gas, particulate matter, and destruction and removal efficiency (DRE).

In addition to requiring the TDUs to meet the appropriate emission limits, both the Draft permit and the permit application must be revised to include the following:

- CWMNW should provide the Department with detailed information describing the waste intended to be managed and the appropriate technical information for the hazardous waste thermal treatment unit, as required by 40 CFR §270.19;
- CWMNW should provide a "trial burn" plan or "comprehensive performance test" (CPT) plan specifically addressing demonstrating their unit's compliance with 40 CFR Part 63 Subpart EEE (aka MACT EEE) emission limits, and the Department should make implementation of this testing a condition of the operation of the TDUs (typically within the first 720 hours of operation);
- CWMNW should provide a description of the ORU-2 automatic waste feed cutoff (AWFCO) system, and adopt appropriate interim operating parameter limits (OPLs) that will assure continued compliance with MACT EEE emission limits, adopt final OPLs based on measurements made in the CPT when the unit is operating in compliance with MACT EEE emission limits, and the Department should make compliance with these AWFCOs and OPLs a condition of the permit;
- CWMNW should provide detailed feedstream management plan, perferrably as part of the facility waste acceptance plan (WAP) to assure that OPLs related to the ORU-2 feedstream are in continuous compliance with values demonstrated in the CPT; such as limits on the mass feed rate and/or concentration for mercury, semi-volatile metals, low-volatile metals, and hydrogen chloride generators.
- CWMNW should provide detailed description and compliance and monitoring limits

for air emissions control associated with the proposed waste receiving activities for the ORU. It is well known that oil bearing hazardous waste from petroleum refining contains VOCs greater than 500 ppm, and the receiving and management of that material is subject to the requirements of 40 CFR Part 264 Subpart CC.

In support of the above comments I refer the Department to US District Court Eastern District of Arkansas, Civil Action 4-07-CV 01189-SWW, United States of America vs. Rineco Chemical Industries, May 19, 2010 Consent Decree. This document is provided in Exhibit 2. In the Rineco matter USEPA Region 6 and the Federal Court concluded that a thermal desorption unit that combusts in an associated thermal oxidizer the non-condensible organic chemical constituents generated from hazardous waste feeds is a RCRA permitted thermal treatment unit subject to 40 CFR Part 264 Subpart X, and specifically subject to the appropriate requirements of both 40 CFR Part 264 Subpart O and 40 CFR Part 63 Subpart EEE. Rineco was required to adopt "interim" operating parameter limits so that operation of the TDU and TO did not exceed Subpart EEE emissions limits, and to prepare a CPT plan, and to perform a CPT, and to adopt final operating parameter limits based on the CPT such that Subpart EEE emissions limits were not exceeded during subsequent operation of the TDU and its associated TO.

This regulatory doctrine has since been reinforced through USEPA Region 6 Consent Agreement and Final Order (CAFO) with US Ecology Texas and TD*X Associates LP, dated October 4, 2012. That CAFO drew essentially the same conclusions as in the Rineco matter. Furthermore, USEPA Region 6 has recently issued a guidance letter confirming this regulatory doctrine for TDUs that are located at treatment, storage and disposal facilities (TSDFs). Both that guidance letter, addressed to J.D. Head dated May 2, 2016, and the request letter that lead to it are included as Exhibit 1 to this comment letter.

I must also point out that CWM's Lake Charles, LA facility is installing two TDUs for the exact same purpose as the proposed ORU-2 at CWMNW. EPA has determined that those units are subject to RCRA permitting under 40 CFR Part 264 Subpart X and must comply with the MACT EEE emission limits. A June 24, 2016 letter from EPA to LDEQ is provided in Exhibit 1 to this affect. The CPT plan for these units is provided as Exhibit 3 to this letter.

I have an additional comment related to the fact that CWMNW appears to be planning on generating and selling a recycled oil from the processing of hazardous waste in the ORUs. The Department should implement specific conditions of operation for both ORUs to preclude the disposal of listed hazardous waste in the "recycled oil" that is generated from these units. The Waste Analysis Plan ("WAP") provided by CWMNW should include provisions for testing of the "recovered oil" to establish that it is neither a hazardous waste, or derived from a hazardous waste. The WAP should further provide a feedstream management plan for the ORUs to assure that "recovered oil" generated by these units does not instead contain listed or otherwise hazardous waste materials. In the absence of these features of the WAP, the Department should make a condition of operation of the ORUs that the oil recovered from them be manifested and disposed as hazardous waste.

Finally, I might add that the existing thermal desorption unit (ORU-1) operated by CWMNW should be subject to compliance with the same emission limits, testing requirements, installation of an AWFCO, and adoption of OPLs as described above. It would be most appropriate to include these requirements in the upcoming 10 yr renewal of the CWMNW RCRA Part B permit. If the units are identical in design and mode of operation, the same testing and OPL settings would be appropriate for ORU-1 as for ORU-2. However, that is a matter to be determined based on a detailed review of the design and operating plan for the ORU-1 unit.

It is difficult to tell from the notice. However, the Stand Alone Attachment #22 indicates the ORU-2 was constructed in 2017. If the unit is presently in operation, it should be immediately required to come into compliance with RCRA, adopt interim OPLs, perform a CDT, and adopt final OPLs.

I am also providing detailed itemized comments on both the published Draft Permit Attachments. These comments are provided on the following pages.

I cannot stress enough to you the importance of addressing each of my comments with additional submission of information by CWMNW and appropriate operating and testing requirements in the final permit. I will be calling you and Richard Duval to verify your understanding of my comments and to confirm the Department's plan for requiring appropriate action by CWMNW in this matter.

Sincerely,

Carl R Palmer 2018.07.16 17:12:41 -04'00'

Carl R. Palmer, P.E.
TD*X Associates LP

Cc Tim Hamlin USEPA Region 10

ITEMIZED COMMENTS ON ODEQ DRAFT PERMIT MODIFICATION

Appendix D – Stand Alone Document #22 Organic Recovery Unit #2

Section 1.4 Wastes Approved for Recycling

This section incorrectly states that the waste material being treated by the system is excluded under 40 CFR 261.6(3)(iv)(C). First, the correct citation is 40 CFR 261.6(a)(3)(iv)(C). That exclusion from RCRA for recycled materials states:

> *(a)(3) The following recyclable materials are not subject to regulation under parts 262 through parts 268, 270 or 124 of this chapter, and are not subject to the notification requirements of section 3010 of RCRA*
>
> ...
>
> *(a)(3)(iv)(C) Oil reclaimed from oil-bearing hazardous wastes from petroleum refining, production, and transportation practices, which reclaimed oil is burned as a fuel without reintroduction to a refining process, so long as the reclaimed oil meets the used oil fuel specification under §279.11 of this chapter.*

This exclusion pertains to only the oil reclaimed from ORU-2, provided that the feed materials are oil bearing hazardous waste (OBHW) exclusively from petroleum refining, production, and transportation practices, and that the reclaimed oil meets the used oil fuel specification at §279.11. The exclusion does not apply to the OBHW received at the facility, nor to the residuals from the treatment process. Only the reclaimed oil is excluded from RCRA. Based on EPA guidance and enforcement actions, because the ORU-2 combusts the gases derived from thermal treatment of the OBHW, the recycling process is subject to permitting under 40 CFR 264 Subpart X and is also subject to the emission limits of MACT EEE.

The section should be rewritten incorporating the above permit doctrine.

Section 1.5 Waste Segregation

This section seems to indicate that the ORU-2 unit may be used to manage materials in a mode that is not for recycling, but rather for disposal of "non-exempt" RCRA regulated materials. If material with different chemical composition than OBHW from petroleum refining is intended to be managed in ORU-2, then the waste description, RCRA codes, chemical and physical properties of that material should be added to the planning documents for the CPT. Appropriate unit and feedstream OPLs should be included for that additional material as a second mode of operation in the CPT.

Section 2.4 Feed Systems

It is noted that OBHW feed material frequently has total VOC content greater than 500 ppm. This material is subject to emission control under 40 CFR 264 Subpart CC. This section describes the creation of waste piles in building B-5. No description of Subpart CC compliant emission controls is provided.

2.7 Petroleum Fractions

This section improperly cites 40 CFR 261.4(a)(12). That exclusion from RCRA is available only to oil recovered from OBHSM at petroleum refineries and injected into the refining process as part of the continuous manufacturing process. It is not available to recovered oil from a TSDF. Furthermore, the reclaimed oil is only excluded under 40 CFR 261.6(a)(3)(iv)(C) if it meets the used oil specification in Table 279.11 and the oil is burned as a fuel. That qualification should be added to the text.

The recovered oil can be recycled and sold to a refinery for insertion into the refining process as an effective substitute for crude oil or other petroleum fractions. This is a most basic exclusion in RCRA, that products are not waste, and is neither part of the Definition of Solid Waste nor exclusions from it. To implement that exclusion, the recycling would require both CWMNW and the receiving refinery to perform a legitimacy determination, and enter into a contract, and some other basic requirements to prevent discard. The permit should also include appropriate conditions to assure that this provision is implemented without any discard, or inappropriate fuel burning of off-specification material.

2.9 Air Emission Controls

The following text should be added at the end of the paragraph.

The combined operation of the ORU-2 and the thermal oxidizer are regulated by 40 CFR 264 Subpart X, and are subject to *the requirements of subparts I through O and subparts AA through CC of this part, part 270, part 63 subpart EEE, and part 146 of this chapter that are appropriate for the miscellaneous unit being permitted.* As such, CWMNW shall submit a CPT plan within 180 days prior to operation of the ORU-2. The CPT plan shall include initial operating parameter limits (OPLs) for both process operating parameters and waste constituents in the ORU feedstream (i.e. mercury, semi-volatile metals, low-volatile metals, and hydrogen chloride). A CPT shall be performed within 720 hours of initial operation of the unit demonstrating compliance with the MACT EEE emission limits in 40 CFR 63 §1219(b). Final OPLs shall be adopted after the CPT that assure continued compliance with these emission limits.

6.1.2 40 CFR Part 264, Subpart X Compliance

As stated above, based on EPA guidance and enforcement actions, because the ORU-2 combusts the gases derived from thermal treatment of the OBHW, the recycling process is subject to

permitting under 40 CFR 264 Subpart X and is are subject to *the requirements of subparts I through O and subparts AA through CC of this part, part 270, part 63 subpart EEE, and part 146 of this chapter that are appropriate for the miscellaneous unit being permitted.*

6.2.2 40 CFR Part 264, Subpart BB Applicability and Compliance

This section incorrectly states that the operations are not subject to Subpart BB. The only material that is excluded from RCRA in this operation is the reclaimed oil, provided it meets certain enumerated restrictions as noted above. The requirement to meet Subpart BB is clearly stated below.

> *§261.6(d) Owners or operators of facilities subject to RCRA permitting requirements with hazardous waste management units that recycle hazardous wastes are subject to the requirements of subparts AA and BB of part 264, 265 or 267 of this chapter.*

The section should be re-written as follows:

> ORU-2 systems are subject to the requirements of 40 CFR Part 264 Subpart BB. CWMNW will develop a compliant inspection and recordkeeping plan. Results of the plan will be maintained on-site and available for inspection by ODEQ personnel.

6.2.3 40 CFR Part 264, Subpart CC Applicability

This section states that the ORU-2 is not subject to Subpart CC while performing recycling operations. That may be true for the "recycling process itself" as stated in §264.6(c)(1). However, the material receipt and preparation for "recycling" is subjected to Subpart CC, including the creation of waste piles in building B-5 as described in this same document. If material subject to either BWON or RCRA Subpart CC is managed in this feed area, it should be provided with VOC emissions control. Does building B-5 have VOC emission control. It appears to have a baghouse. Does it have activated carbon filter? Thermal oxidizer? What are the monitoring and recordkeepting requirements for those units? Carbon filtration requires breakthrough monitoring, preferably according to a plan reviewed and approved by ODEQ. Similarly for a TO. Does building B-5 have adequate ventilation control and entry doors to maintain negative pressure in the building during material movements?

This section further states that the Subpart FF "BWON" regulations apply at times to the unit, and relies on meeting Subpart CC for the tank system by simultaneously meeting BWON. This section should provide at least a general description of how that compliance is managed. For example, if emissions control is provided by the thermal oxidizer, what is done for the period of time that the TDU is not operational? Is there a backup activated carbon adsorption filter for those time periods? It is hard to expect that the tanks are emptied when the TDU and/or TO is not operational. If carbon is used, what is the monitoring and recordkeeping? Has an ODEQ reviewed monitoring plan been prepared?

Section 7 ORU-2 Controls and Monitoring

A specific section should be added to Section 7 describing the Automatic Waste Feed Cutoff System that is required by 40 C.F.R. § 63.1206(c)(3). Appropriate monitored parameters for the AWFCO on a TDU include:

- Internal pressure on the TDU primary desorption chamber, maintained to be a pressure that contains the hazardous waste during operation of the unit, most likely set to maintain a "negative draft" condition in the feed area of the "rotating cylinder" of the ATDU
- Velocity measurement on the thermal oxidizer to provide an indication of residence time to assure adequate combustion,
- Temperature measurement on the thermal oxidizer exhaust to assure adequate combustion. This is CP4 on the CWMNW unit.
- Temperature at the outlet of the condensing system.
- Oxygen concentration measurement in the TDU to prevent combustion or unsafe fires and explosions
- Additional process monitors that are required to assure continuous compliance with MACT EEE emission limits.

A continuous process monitor is required to measure the temperature at the outlet of the condensing system. Considering that the hazardous waste pollutant load on the thermal oxidizers is a strong function of the outlet temperature of the condensing systems, the AWFCO parameters should include a temperature limit for the outlet of the condensers. It is known from Raoult's Law and the vapor pressure properties of the types of materials that CWMNW proposes to treat that the mercury concentration in the condenser effluent approximately doubles for every 18°F increase in the condenser outlet temperature. Individual condensible hydrocarbon compound vapor pressure also doubles, impacting condensing efficiency, but that is hydrocarbon compound specific. Without a limit on condenser temperature, excessive mercury can be emitted if the unit is operated at elevated condenser outlet temperatures as compared to those from the CPT. Also, increased unburned hazardous waste chemical emissions could result. The final permit limit should also be as is demonstrated in the CPT, to assure continued compliance with the emissions that are demonstrated in the CPT.

The other parameters mentioned above should be obvious as being required by an experienced operator of a TDU.

Section 7.1 Control Device Monitoring

The monitoring required by 40 CFR 61 Subpart FF "BWON" also includes leak checking by instrument "Method 21" for the containers, tanks, the waste management unit, oil water separators, closed vent system and control devices. All of the process piping on the TDU should be included in the leak checking for the Waste Management Unit. Otherwise, RCRA Subpart BB LDAR should be followed for the process piping as mandated by §261.6(d). BWON is essentially self implementing, and has extensive monitoring, testing, inspection and recordkeeping requirements.

However, ODEQ may require a demonstration of initial compliance for control devices.

Activated carbon filters require breakthrough monitoring. A brief summary of those requirements should be included in this section.

Section 7.3 Other Equipment Monitoring

This section incorrectly states that the ORU-2 is not subject to Subpart BB while performing recycling of oil bearing wastes. Refer to comments above in Section 6.2.2.

COMMENTS ON CWMNW RCRA PERMIT

Additional specific comments on the actual permit documents, including the facility WAP, will be provide when those documents are made available for review.

EXHIBIT 1

A - Letter dated October 3, 2015 from JD Head to USEPA Region 6

B - Letter dated May 2, 2016 from USEPA Region 6 to JD Head

C - Letter dated June 24, 2016 from USEPA Region 6 to Estuardo Silva LDEQ

FBH&F

Fritz, Byrne, Head & Fitzpatrick, PLLC

Attorneys at Law

October 30, 2015

Mr. John Blevins
Compliance Assurance & Enforcement Division
Division Director 6EN
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

SUBJECT: Hazardous Waste Regulatory Standards for Thermal Desorption Units at TSDFs

Dear Mr. Blevins:

Thermal desorption units (TDUs) are broadly used to treat hazardous waste and hazardous secondary materials. The application of thermal desorption technology within a recycling or reclamation process has been reviewed by Region 6 in multiple enforcement cases. The resulting allegations and consent agreements have established EPA's regulatory position. This letter presents my understanding of EPA's position on certain regulatory and technical requirements for TDUs that are installed at a RCRA treatment storage and disposal facility (TSDF).

A TDU is a thermal treatment device that heats solid material to vaporize, remove, and separate organic constituent materials from the solids. The solids are discharged with little or no residual organic contaminants. In the embodiment that is the subject of this letter, the separated organic constituents are condensed and recovered as a liquid. The TDU process characteristically generates a vent gas after the condensing system. When high organic content material is processed in the TDU it is quite common for the unit to combust the vent gas as an effective means of air pollution control. It is the regulatory applicability related to the combustion of all or a portion of the vent gas that I am seeking clarification.

TDUs at RCRA TSDFs.

One application of thermal desorption technology is to commercially reclaim oil from various generators of oil bearing hazardous waste. These hazardous wastes are generated by petroleum refining, production and transportation practices, and are typically listed as either K048, K049,

K050, K051, K052, K169, K170, K171, K172, F037 or F038, or may be hazardous by characteristic (i.e. "D" coded). If the hazardous waste recycled in the TDU comes exclusively from the above sources, the oil reclaimed from the TDU may be burned as a non-hazardous fuel if it meets the Used Oil Specification (UOS) at § 279.11, as per 40 CFR § 261.6(a)(3)(iv)(C). If the oil does not meet the UOS, it would remain a listed waste and require disposal at an appropriately permitted and operated facility, such as a Part 266 "BIF" or a Part 264 Subpart O incinerator. The generator will manifest and ship oil bearing hazardous waste to the commercial facility for treatment and/or reclamation. Based on two focused enforcement actions in EPA Region 6 since 2008, it appears EPA has concluded the following findings and regulatory requirements apply to commercial TDUs receiving offsite RCRA hazardous waste for treatment or reclamation.

1. For a TDU that combusts all or a portion of the vent gas, combustion of the TDU vent gas from RCRA hazardous waste or recyclable RCRA regulated materials is considered thermal treatment that is regulated by RCRA.
2. Thermal treatment of the vent gas requires a RCRA permit, 40 CFR Part 264 Subpart X or Subpart O, and a RCRA permit under one of these Subparts is required even if the facility is operating as a RCRA exempt recycling activity.
3. For TDUs with vent gas combustion processes that are permitted under RCRA Subpart X, the RCRA permitting authority should include in the permit application and final permit appropriate conditions from RCRA Subparts I through O, AA, BB and CC, and also include appropriate conditions from Part 63 Subpart EEE (i.e. the MACT "EEE").
4. The TDU must have an automatic waste feed cutoff system and establish appropriate operating parameter limits (OPLs) prior to initial operation to assure continued compliance with all emissions limits.
5. Minimum appropriate conditions from the MACT "EEE" include compliance with emission limits for particulate matter, hydrochloric acid, volatile metals (Hg), semivolatile metals, low volatile metals, destruction and removal efficiency, carbon monoxide, total hydrocarbons, and dioxins.
6. A compliance demonstration test (Trial Burn) is required to establish that the emissions from the combustion of the vent gas meet the emissions limits that were determined appropriate for the unit, including MACT "EEE."
7. Final OPLs shall be derived from demonstrated test conditions and established as permit requirements for the continued operation of the TDU.
8. Failure to demonstrate compliance with emissions limits requires shutdown of the TDU on RCRA regulated waste materials until corrective measures and re-demonstration can be implemented.

Please confirm that each of these enumerated statements accurately reflect EPA's regulatory conclusions for the management of commercial TDUs that combust vent gases generated from receiving offsite hazardous waste for treatment or reclamation at a TSDF.

Your support in clarifying these matters is most appreciated. My client intends to construct and install one or more TDUs in Region 6 that may be located at a TSDF and desires regulatory certainty on the issues discussed herein.

Sincerely,

J.D. Head
Fritz, Byrne, Head & Fitzpatrick, PLLC
221 W. 6th Street, Suite 960
Austin, Texas 78701
(512) 476-2020 telephone
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 Ross Avenue
Dallas, Texas 75202-2733

2 MAY 2016

Mr. J.D. Head
Fritz, Byrne, Head & Fitzpatrick, PLLC
221 West 6th Street
Suite 960
Austin, Texas 78701

Dear Mr. Head:

Thank you for your October 30, 2015 letter requesting clarification of the hazardous waste regulatory standards for thermal desorption units (TDUs) installed at RCRA treatment, storage, and disposal facilities (TSDFs). I apologize for the delay in responding to your request. In your scenario, the TDU reclaims oil from oil bearing hazardous wastes generated by petroleum refining, production, or transportation practices. You describe a TDU as a device that heats solid material to vaporize, remove, and separate organic constituent materials from solids. In the scenario you describe at a TSDF, the separated organic constituents are typically condensed and recovered as a liquid oil. The TDU process also generates a vent gas after the condensing stream.

Your inquiry also references 40 C.F.R. § 261.6(a)(3)(iv)(C)[1], which provides that:

> Oil reclaimed from oil-bearing hazardous waste from petroleum refining, production, or transportation practices, which reclaimed oil is burned as a fuel without reintroduction to a refining process, so long as the used oil specification under 40 C.F.R. § 279.11 is not subject to regulation under 40 C.F.R. Parts 262 – 268, 270, or 40 C.F.R. Part 124, and is not subject to the notification requirements of Section 3010 of RCRA.

If the above conditions are met, then the reclaimed oil can be burned as a non-hazardous fuel. If the oil-bearing hazardous waste is not from petroleum refining, production, or transportation practices, then the reclaimed oil is subject to RCRA regulation.

If a TDU combusts all or a portion of the vent gas, combustion of the TDU vent gas from RCRA hazardous waste or recyclable materials [40 C.F.R. § 261.6(a)(1)] is considered thermal treatment that is regulated by RCRA. The material being treated (oil-bearing hazardous waste) is already a hazardous waste. Heating hazardous wastes to a gaseous state is subject to regulation under RCRA as treatment of hazardous waste, and thermal treatment after a material becomes a hazardous waste is fully regulated under RCRA. 54 Fed. Reg. 50968, 50973 (December 11, 1989). Thus, thermal treatment of the vent gas requires a RCRA permit.

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[1] Since you did not reference a specific State in which your client may operate a TDU, this letter cites to the applicable federal regulations. If the State has an authorized RCRA program, the corresponding state regulation would be applicable.

If the vent gas is combusted in the combustion chamber of the TDU, then a permit under 40 C.F.R. Part 264, Subpart O is required, because the TDU would meet the definition of incinerator in 40 C.F.R. § 260.10 (an enclosed device that uses controlled flame combustion). If, on the other hand, the vent gas is vented to and combusted in a thermal oxidizing unit (TOU), the permitting authority may be able to permit the entire unit (TDU and TOU) as a miscellaneous unit under 40 C.F.R. Part 264, Subpart X. A RCRA permit would be required even if the facility is operating as a RCRA exempt recycling activity under 40 C.F.R. § 261.6(a)(3)(iv)(C). If the permitting authority decides to issue a 40 C.F.R. Part 264, Subpart X permit, the permitting authority is required to include in the permit requirements from 40 C.F.R. Part 264, Subparts I through O, AA, BB, and CC, 40 C.F.R. Part 270, 40 C.F.R. Part 63, Subpart EEE, and 40 C.F.R. Part 146 that are appropriate for the miscellaneous unit being permitted as required in 40 C.F.R. § 264.601. The decisions as to what appropriate requirements would be included in the permit would be left to the permitting authority. However, EPA would expect that the permit conditions would be similar to those set forth in the enclosed Consent Agreement and Final Order, In Re: US Ecology Texas, Inc. and TD*X Associates, LP, EPA Docket Nos. RCRA-06-2012-0936 and RCRA-06-2012-0937, filed October 4, 2012.

If you have any questions, please feel free to contact Guy Tidmore of my staff at (214) 665-3142 or via e-mail at tidmore.guy@epa.gov.

Sincerely,

John Blevins
Director
Compliance Assurance and
Enforcement Division

Enclosure

Cc: Penny Wilson, ADEQ
Lourdes Iturralde, LDEQ
John Kieling, NMED
Mike Stickney, ODEQ
James Gradney, TCEQ

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 6
DALLAS, TEXAS

IN THE MATTER OF:	)	
US ECOLOGY TEXAS, INC., and TD*X ASSOCIATES LP	)	DOCKET NOS. RCRA-06-2012-0936 and RCRA-06-2012-0937
RESPONDENTS	)	

CONSENT AGREEMENT AND FINAL ORDER

The Director of the Compliance Assurance and Enforcement Division of the United States Environmental Protection Agency (EPA), Region 6 (Complainant) and US Ecology Texas, Inc. and TD*X Associates L.P. (Respondents) in the above-referenced proceeding, hereby agree to resolve this matter through the issuance of this Consent Agreement and Final Order (CAFO).

I. PRELIMINARY STATEMENT

1. This proceeding for the assessment of civil penalties and the issuance of a compliance order is brought by EPA pursuant to Section 3008 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6928, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), and is simultaneously commenced and concluded through the issuance of this Consent Agreement and Final Order (CAFO) pursuant to 40 C.F.R. §§ 22.13(b), 22.18(b)(2) and (3), and 22.37.

2. Notice of this action was given to the State of Texas prior to the issuance of this CAFO, as required by Section 3008(a)(2) of RCRA, 42 U.S.C. § 6928(a)(2).

3. For the purposes of this proceeding, the Respondents admit the jurisdictional allegations contained herein; however, the Respondents neither admit nor deny the specific factual allegations contained in this CAFO.

4. The Respondents explicitly waive any right to contest the allegations and their right to appeal the proposed Final Order set forth therein, and waive all defenses which have been raised or could have been raised to the claims set forth in the CAFO.

5. Compliance with all the terms and conditions of this CAFO shall resolve only those violations which are set forth herein.

6. The Respondents consent to the issuance of the CAFO hereinafter recited and consent to the issuance of the Compliance Order contained therein.

II. FINDINGS OF FACT AND CONCLUSIONS OF LAW

A. PRELIMINARY ALLEGATIONS

7. US Ecology Texas, Inc. (USET) is a corporation incorporated under the laws of the State of Delaware and authorized to do business in the State of Texas.

8. TD*X Associates LP (TD*X) is a limited partnership authorized to do business in the State of Texas.

9. "Person" is defined in 30 T.A.C. § 3.2(25) [40 C.F.R. §§ 260.10 and 270.2], and Section 1004(5) of RCRA, 42 U.S.C. § 6903(15) as "an individual, corporation, organization, government or government subdivision or agency, business trust, partnership, association, or any other legal entity."

10. The Respondent USET is a "person" as defined by 30 T.A.C. § 3.2 (25) [40 C.F.R. § 260.10], and Section 1004 (15) of RCRA, 42 U.S.C. § 6903(15).

11. The Respondent TD*X is a "person" as defined by 30 T.A.C. § 3.2 (25) [40 C.F.R. § 260.10], and Section 1004 (15) of RCRA, 42 U.S.C. § 6903 (15).

12. "Owner" is defined in 30 T.A.C. § 335.1(108) [40 C.F.R. § 260.10] as "the person who owns a facility or part of a facility."

13. "Operator" is defined in 30 T.A.C. § 335.1(107) [40 C.F.R. § 260.10] as "the person responsible for the overall operation of a facility".

14. "Owner or operator" is defined in 40 C.F.R. § 270.2 as "the owner or operator of any facility or activity subject to regulation under RCRA."

15. "Facility" is defined in 30 T.A.C. § 335.1(59) [40 C.F.R. § 260.10] as meaning "all contiguous land, and structures, other appurtenances, and improvements on the land, used for storing, processing, or disposing of municipal hazardous waste or industrial solid waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them)."

16. The Respondent USET owns and operates a hazardous waste treatment, storage, and disposal (TSD) facility located at 3327 County Road 69, Robstown, TX 78380, EPA I.D. No. TXD069452340, Permit No. HW-50052-001.

17. The TSD identified in Paragraph 16 is a "facility" as that term is defined in 30 T.A.C. § 335.1(59) [40 C.F.R. § 260.10].

18. The Respondent USET is the "owner" and/or "operator" of the facility identified in Paragraph 16, as those terms are defined in 30 TAC § 335.1(107) & (108) [40 C.F.R. § 260.10] and 40 C.F.R. § 270.2.

19. An oil reclamation unit is located at the facility identified in Paragraph 16.

20. The Respondent TD*X owns and operates a thermal desorption unit (TDU), as well as the feed preparation system that includes a shaker tank (T-30), three mix tanks (T-31, T-32, and T-33), a centrifuge, and a surge tank (T-34) at the oil reclamation unit.

21. The Respondent TD*X began operating the TDU and related equipment on or about June 15, 2008.

22. On or about June 8 – 11, 2010, June 14 – 17, 2010, and August 9 – 11, 2010, the Respondent USET's TSD facility and the oil reclamation unit were inspected by representatives of EPA pursuant to Section 3007 of RCRA, 42 U.S.C. § 6927.

B. VIOLATIONS

Count One – Processing Hazardous Waste Without a Permit or Interim Status

23. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment),[1] storage, or disposal of hazardous waste.

24. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

25. "Recyclable materials" is defined in 30 T.A.C. §335.24(a) [40 C.F.R. § 261.6(a)(1)] as "hazardous wastes that are recycled".

[1] The Texas Administrative Code uses the term "processing" instead of "treatment". The term "processing" as used by Texas is essentially equivalent to the term "treatment" as used in the federal statute and regulations.

26. The Respondent USET receives "hazardous waste" from off-site generators, as that term is defined by 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

27. The Respondent USET receives "recyclable materials" from off-site generators, as that term is defined by 30 T.A.C. § 335.24(a) [40 C.F.R. § 261.6(a)(1)].

28. Recyclable materials destined for oil reclamation are transferred to the Respondent TD*X by the Respondent USET.

29. Processing (treatment) is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] as follows:

> The extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of solid waste or hazardous waste, designed to change the physical, chemical, or biological character or composition of any solid waste or hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The transfer of solid waste for reuse or disposal as used in this definition does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the executive director determines that regulation of such activity is necessary to protect human health or the environment, the definition of processing does not include activities relating to those materials exempted by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§6901 *et seq.*, as amended.

30. On various dates after June 15, 2008, certain recyclable materials were processed in the tanks identified in Paragraph 20.

31. The recyclable materials identified in Paragraph 30 did not meet the exemption in 30 T.A.C. § 335.24(c)(4)(C) [40 C.F.R. § 261.6(a)(3)(iv)(C) because the hazardous wastes were not "oil-bearing hazardous wastes from petroleum refining, production, and transportation practices."

32. The Respondent TD*X processed (treated) hazardous waste as that term is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] in the tanks identified in Paragraph 20.

33. To date, neither the Respondent USED nor Respondent TD*X has applied for nor received a RCRA permit or interim status to allow the processing (treatment) of hazardous waste in the tanks identified in Paragraph 20.

34. Therefore, the Respondent USET and the Respondent TD*X have violated Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by processing (treating) hazardous waste without a RCRA permit or interim status.

Count Two – Processing Hazardous Waste Without a Permit or Interim Status

35. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment), storage, or disposal of hazardous waste.

36. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

37. "Recyclable materials" is defined in 30 T.A.C. §335.24(a) [40 C.F.R. § 261.6(a)(1)] as "hazardous wastes that are recycled".

38. The Respondent USET receives "hazardous waste" from off-site generators, as that term is defined by 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

39. The Respondent USET receives "recyclable materials" from off-site generators, as that term is defined by 30 T.A.C. § 335.24(a) [40 C.F.R. § 261.6(a)(1)].

40. Recyclable materials destined for oil reclamation are transferred to the Respondent TD*X by the Respondent USET.

41. On various dates after June 15, 2008, certain recyclable materials were fed into the TDU that did not meet the exemption in 30 T.A.C. § 335.24(c)(4)(C) [40 C.F.R. § 261.6(a)(3)(iv)(C) because the hazardous wastes were not "oil-bearing hazardous wastes from petroleum refining, production, and transportation practices."

42. Processing (treatment) is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] as follows:

> The extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of solid waste or hazardous waste, designed to change the physical, chemical, or biological character or composition of any solid waste or hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The transfer of solid waste for reuse or disposal as used in this definition does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the executive director determines that regulation of such activity is necessary to protect human health or the environment, the definition of processing does not include activities relating to those materials exempted by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§6901 *et seq.*, as amended.

43. Thermal processing (thermal treatment) is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10] as follows:

> the processing of solid waste or hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the solid waste or hazardous waste. Examples of thermal processing are incineration, molten salt, pyrolysis, calcination, wet air

oxidation, and microwave discharge. (See also "incinerator" and "open burning.").

44. The TDU uses heat from an indirect heated rotary dryer to separate the organic constituents from the hazardous waste feed material. A nitrogen carrier gas is used to transfer the vapor phase organic constituents to a gas treatment system. The oil is recovered by condensing vapor phase organic constituents in the gas treatment system. A portion of the TDU's recirculating nitrogen carrier gas, along with non-condensable gases, is vented, filtered, and then injected into the combustion chamber of the TDU, where it is burned.

45. The separation of the organic constituents from the hazardous waste in the TDU's indirectly heated rotary dryer constitutes thermal processing (thermal treatment) as that term is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10].

46. To date, neither the Respondent USET nor Respondent TD*X has applied for nor received a RCRA permit or interim status to allow the thermal processing (thermal treatment) of hazardous waste in the TDU.

47. Therefore, the Respondent USET and the Respondent TD*X have violated Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by thermally processing (thermally treating) hazardous waste without a RCRA permit or interim status.

Count Three - Processing Hazardous Waste Without a Permit or Interim Status

48. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment), storage, or disposal of hazardous waste.

49. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States

Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

50. The Respondent USET receives "hazardous waste" from off-site generators, as that term is defined by 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

51. Hazardous wastes destined for oil reclamation are transferred to the Respondent TD*X by the Respondent USET.

52. On various dates after June 15, 2008, hazardous wastes were fed into the TDU.

53. The TDU uses heat from an indirect heated rotary dryer to separate the organic constituents from the hazardous waste feed material. A nitrogen carrier gas is used to transfer the vapor phase organic constituents to a gas treatment system. The oil is recovered by condensing vapor phase organic constituents in the gas treatment system. A portion of the TDU's recirculating nitrogen carrier gas, along with non-condensable gases, is vented, filtered, and then injected into the combustion chamber of the TDU, where it is burned.

54. Processing (treatment) is defined in 30 T.A.C. § 335.1(122) [40 C.F.R. § 260.10] as follows:

> The extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of solid waste or hazardous waste, designed to change the physical, chemical, or biological character or composition of any solid waste or hazardous waste so as to neutralize such waste, or so as to recover energy or material from the waste or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. The transfer of solid waste for reuse or disposal as used in this definition does not include the actions of a transporter in conveying or transporting solid waste by truck, ship, pipeline, or other means. Unless the executive director determines that regulation of such activity is necessary to protect human health or the environment, the definition of processing does not include activities relating to those materials exempted by the administrator of the United States Environmental Protection Agency in

> accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§6901 *et seq.*, as amended.

55. Thermal processing (thermal treatment) is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10] as follows:

> the processing of solid waste or hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the solid waste or hazardous waste. Examples of thermal processing are incineration, molten salt, pyrolysis, calcination, wet air oxidation, and microwave discharge. (See also "incinerator" and "open burning.")

56. The burning of gases in the TDU's combustion chamber constitutes thermal processing (thermal treatment) as that term is defined in 30 T.A.C. § 335.1(149) [40 C.F.R. § 260.10].

57. The combustion chamber of the TDU is an enclosed device that uses controlled flame combustion.

58. The combustion chamber of the TDU does not meet the criteria for classification as a boiler, sludge dryer, or carbon regeneration unit, nor is listed as an industrial furnace; nor meets the definition of infrared incinerator or plasma arc incinerator."

59. To date, neither the Respondent USET nor Respondent TD*X has applied for nor received a RCRA permit or interim status to allow the thermal processing (thermal treatment) of hazardous waste in the combustion chamber of the TDU.

60. Therefore, the Respondent USET and the Respondent TD*X have violated and continue to violate Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e) and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by thermally processing (thermally treating) hazardous waste without a RCRA permit or interim status.

Count Four – Storing Hazardous Waste Without a Permit Or Interim Status

61. Pursuant to Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)], a RCRA permit or interim status is required for the processing (treatment), storage, or disposal of hazardous waste.

62. "Storage" is defined in 30 T.A.C. § 335.1(143) [40 C.F.R. § 260.10] as "the holding of solid waste for a temporary period, at the end of which the waste is processed, disposed of, recycled, or stored elsewhere."

63. Between on or about March 9, 2010, and June 11, 2010, the Respondent USET stored roll-off boxes in the area called the "Y" at the facility.

64. The roll-off boxes identified in Paragraph 63 contained material which had entered the oil reclamation process and was being temporarily staged before undergoing subsequent stages of the reclamation process. The Respondent USET discontinued the use of the area called the "Y" for this purpose.

65. "Hazardous waste" is defined in 30 T.A.C. § 335.1(69) [40 C.F.R. § 261.3] as "any solid waste identified or listed as a hazardous waste by the administrator of the United States Environmental Protection Agency in accordance with the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, 42 United States Code, §§ 6901 *et seq.*"

66. The roll-off boxes identified in Paragraph 63 contained "hazardous waste" as that term is defined in T.A.C. § 335.1(69) [40 C.F.R. § 261.3].

67. The Respondent USET had not applied for nor received a RCRA permit or interim status to allow the storage of hazardous waste at the area called the "Y".

68. Therefore, the Respondent USET has violated Sections 3005(a) and (e) of RCRA, 42 U.S.C. §§ 6925(a) and (e), and 30 T.A.C. § 335.43(a) [40 C.F.R. § 270.1(b)] by storing hazardous waste without a RCRA permit or interim status.

III. COMPLIANCE ORDER

69. Pursuant to Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), the Respondents are hereby **ORDERED** to take the following actions and provide evidence of compliance within the time period specified below:

A. Interim Operating Requirements

1. As of the effective date of this CAFO, feedstock for the oil reclamation unit shall consist only of non-hazardous waste, and oil-bearing hazardous waste from petroleum refining, production, and transportation practices. Oil-bearing hazardous waste from petroleum refining, production, or transportation practices includes the following listed hazardous waste from specific Petroleum Refining Sources (K049, K050, K051, K052, K169, and K170). Also acceptable is oil-bearing hazardous waste from processes which meet the definition of the following Standard Industrial Classification (SIC) codes and corresponding North American Industry Classification System (NAICS) codes (i.e., petroleum refining, production, and transportation practices) as follows:

SIC Code	SIC Description	NAICS Code	NAICS Title
1311	Crude Petroleum & Natural Gas	211111	Crude Petroleum and Natural Gas Extraction
1321	Natural Gas Liquids	211112	Natural Gas Liquid Extraction
1381	Drilling Oil & Gas Wells	213111	Drilling Oil and Gas Wells
1382	Oil & Gas Field Exploration Services (except geophysical mapping & surveying)	213112	Support Activities for Oil & Gas Operations
1389	Oil and Gas Field Services, NEC (except construction of field gathering lines, site	213112	Support Activities for Oil and Gas Operations

	preparation and related construction activities performed on a contract or fee basis)		
2911	Petroleum Refining	324110	Petroleum Refineries
4612	Crude Petroleum Pipelines	486110	Pipeline Transportation of Crude Oil
4613	Refined Petroleum Pipelines	486910	Pipeline Transportation of Refined Petroleum Products
4789	Transportation Services, NEC (pipeline terminals and stockyards for transportation)	488999	All Other Support Activities for Transportation
4922	Natural Gas Transmission	486210	Pipeline Transportation of Natural Gas
4923	Natural Gas Transmission and Distribution (distribution)	221210	Natural Gas Distribution
4923	Natural Gas Transmission and Distribution (transmission)	486210	Pipeline Transportation of Natural Gas
5171	Petroleum Bulk Stations and Terminals (except petroleum sold via retail method)	488999	All Other Support Activities for Transportation
5172	Petroleum and Petroleum Products Wholesalers, Except Bulk Stations and Terminals (merchant wholesalers)	424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)

2. Using feedstock from processes meeting the definition of the aforementioned SIC/NAICS Codes does not constitute compliance with 40 C.F.R. § 261.6(a)(3)(iv)(C) or this CAFO. The Respondents are required to make a separate determination whether the hazardous waste in question is "oil-bearing," and that the hazardous waste was originally generated from petroleum refining, production, or transportation practices.

3. As of the effective date of this CAFO, when the dryer feed is on, the Respondents shall operate the TDU in accordance with the interim operating parameters set forth in Appendix 1, Table A, which is attached and incorporated by reference into this CAFO. The Blending Protocols referenced in Appendix 1 is attached as Appendix 2, and incorporated by reference into this CAFO.

4. As of the effective date of this CAFO, Respondents shall comply with the Start-Up, Shutdown, and Malfunction Plan (SSM Plan) (CDT Plan, Appendix E). The Compliance Demonstration Test (CDT) Plan is attached as Appendix 3 and incorporated by reference into the CAFO.

5. Within sixty (60) days of the effective date of this CAFO, the Respondents shall conduct a tune-up of the external combustion chamber of the TDU in accordance with the following requirements:

a. As applicable, inspect the burner and clean or replace any components of the burner as necessary. The burner inspection may be delayed until the next scheduled or unscheduled unit shutdown.

b. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specification.

c. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.

d. Optimize total emissions of carbon monoxide (CO). This optimization should be consistent with the manufacturer's specifications, if available.

e. Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made. Measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made.

f. Perform sampling and analysis of both dryer furnace stacks using Method TO-15, "Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)". If the total

organic matter result is greater than 10 ppmV for either stack, the analysis shall include speciation of the gas. This information shall be included in the report required in Paragraph 69.A.5.g below.

g. Maintain on-site a report documenting the concentrations of CO in the effluent stream in parts per million by volume, and oxygen in volume present, measured before and after the adjustments of the external combustion chamber of the TDU, and a description of any corrective actions taken as part of the combustion adjustment.

h. Subsequent tune-ups shall be conducted annually until the TDU is reconfigured.

6. Within sixty (60) days of the effective date of this CAFO, the Respondents shall conduct a fuel specification analysis of the purge vent gas for mercury and document that it does not exceed the maximum concentration of 40 micrograms/cubic meter of mercury using test methods ASTM D5954, ASTM D6350, ISO 6978-1:2003(E), or ISO 6978-2:2003(E), or an alternate test method approved by EPA. If the concentration of mercury exceeds 40 micrograms/cubic meter, the Respondents shall immediately notify EPA.

7. Within ninety (90) days of the effective date of this CAFO, the Respondents shall install, monitor, and operate an automatic hazardous waste feed cutoff (AWFCO) at the TDU in accordance with 40 C.F.R. § 63.1206(c)(3)(ii) and (iv) that immediately and automatically cuts off the hazardous waste feed when any component of the AWFCO system fails, or when one or more of the interim operating parameters set forth in Appendix 1, Table A that are designated as AWFCO parameters are not met. The Respondents shall also comply with the investigation, recordkeeping, testing, and reporting requirements of 40 C.F.R. § 63.1206(c)(3)(v), (vi) and (vii).

8. Within one year of the effective date of this CAFO, the Respondents shall reconfigure the TDU so that the non-condensable vent gases are routed to a thermal oxidizing unit (TOU)

instead of the combustion chamber of the TDU (Reconfigured TDU). After reconfiguration, fuel for the TDU is limited to natural gas and propane.

9. The Respondents shall operate the Reconfigured TDU during the shakedown period in accordance with the operating parameters limits set forth in Appendix 1, Table B when the dryer feed is on. The Respondent shall not operate the Reconfigured TDU more than 720 hours (including the shakedown period and the Compliance Demonstration Test). The Respondents shall keep records of the hours of operation during the shakedown period. The Respondents shall operate a continuous emissions monitor system (CEMS) for carbon monoxide (CO) for the TOU during the shakedown period. The Respondents shall operate the Reconfigured TOU in a manner that the hourly rolling averages for CO are not exceeded. The rolling averages shall be calculated in accordance with 40 C.F.R. §§ 63.1209(a)(6) and 63.1209(b)(5).

10. During the shakedown period, the Respondents shall monitor and operate an automatic hazardous waste feed cutoff (AWFCO) at the Reconfigured TDU in accordance with 40 C.F.R. § 63.1206(c)(ii) and (iv) that immediately and automatically cuts off the hazardous waste feed when any component of the AWFCO system fails, or when one or more of the operating parameter limits set forth in Appendix 1, Table B that are designated as AWFCO parameters are not met. The Respondents shall also comply with the investigation, recordkeeping, testing, and reporting requirements of 40 C.F.R. § 63.1206(c)(3) (v), (vi) and (vii).

11. The Respondents shall conduct a test measuring the concentration of CO in the exhaust gases from the TOU. This test shall include three one-hour runs during which the TDU is operated on oil-bearing hazardous waste. The emissions from the TOU stack shall be monitored for carbon monoxide and oxygen using EPA Method 10. The emissions shall be

demonstrated to be less than 100 ppmV CO corrected to 7% O_2 in each run. The test frequency shall be once during each six-month period, January 1 – June 30 and July 1 - December 31, said time period to commence after conducting the CDT and continuing until the TCEQ issues a RCRA Subpart X permit for the Reconfigured TDU. Within forty-five (45) days after conducting the test, the Respondents shall submit a test report to EPA summarizing the test results. The time periods for conducting the test may be changed to once during each twelve (12) month calendar period, January 1 - December 31, if the Respondents submit to EPA, with a copy to TCEQ, a detailed feed stream analysis plan that characterizes the waste received by the facility, and EPA approves the plan. The detailed feedstream analysis plan shall be prepared in accordance with 40 C.F.R. § 264.13 and the EPA Guidance Document "Waste Analysis At Facilities That Generate, Treat, Store, And Dispose of Hazardous Waste", OSWER 9938.4-03 (April 1994). The Respondents will implement the detailed feedstream analysis plan, as approved or modified by EPA, immediately upon receipt of EPA's approval.

12. The Respondents shall prepare a report for the time period beginning on the effective date of this CAFO and ending June 30, 2013, and every six (6) months thereafter. The report shall be submitted to EPA, with a copy to TCEQ, within thirty (30) days of the end of the reporting period. The report shall include the following:

a. For each waste stream accepted by the oil reclamation unit, identify the customer, original generator, waste stream description, RCRA waste codes, the SIC or NAICS code of the process generating the waste, a summary of any analyses conducted by the Respondents to verify the waste stream profiles, and the total volume of waste accepted during the reporting period. If requested by EPA, the Respondents shall provide copies of relevant waste approval documents and manifests for the specific waste streams.

b. All time periods in which there were exceedances of the operating parameters and the AWFCO requirements set forth in Appendix 1, Tables A and B, and exceedances of the hourly rolling averages for CO (Paragraph 69.A.9).

c. All exceedances of the Reconfigured TDU Compliance Standards and the AWFCO requirements established in accordance with Paragraph 69.C.9.

d. The initial Report shall include documentation showing that the tune-up and fuel specification analysis required by Paragraphs 69.A.5 and 69.A.6 have been conducted, and provide documentation showing the date of installation and subsequent operation of the AWFCO system required by Paragraphs 69.A.7.

e. Documentation showing the installation of the TOU required by Paragraph 69.A.8, and the additional AWFCO requirements required by Appendix 1, Table B (Paragraph 69.A.10).

The Report may be submitted in an electronic format (i.e., compact disk). The Respondents may claim the report as confidential business information (CBI), in accordance with the requirements of 40 C.F.R. Part 2. However, information that is emissions data or a standard or limitation cannot be claimed as CBI. 40 C.F.R. § 2.301(e). If the Report contains any information that is claimed CBI, the Respondents shall provide a redacted version with all CBI deleted.

B. RCRA Permit Modification

1. Within one year of the effective date of this CAFO, the Respondents shall submit to TCEQ, with a copy to EPA, an application for a Class 3 RCRA Permit Modification to permit the Reconfigured TDU as a miscellaneous unit under 40 C.F.R. Part 264, Subpart X in accordance with 30 T.A.C. § 335.152(a)(16) [40 C.F.R. Part 264, Subpart X], 30 T.A.C. Chapter 305 [40 C.F.R. §§ 270.10 – 270.14, 270.19, 270.23, and 270.30 – 270.33].

2. The permit application shall also include relevant requirements of 40 C.F.R. Part 264, Subparts I through O and AA through CC, 40 C.F.R. Part 270, and 40 C.F.R. Part 63, Subpart EEE that are appropriate for the operation of the Reconfigured TDU, including an engineering report, waste analysis, monitoring and inspection requirements, and closure requirements set forth in 30 T.A.C. § 335.152(a)(13) [40 C.F.R. §§ 264.341, 264.347, and 264.351].

3. The Respondents shall also request that the issued RCRA permit modification include the following:

a. The feedstock limitations applicable to the operation of the oil reclamation unit under 40 C.F.R. § 261.6(a)(3)(iv)(C) set forth in Paragraph 69.D;

b. The investigation, recordkeeping, testing, and reporting requirements of 40 C.F.R. § 63.1206(c)(3) (v), (vi) and (vii);

c. Appropriate recordkeeping and reporting requirements; and

d. Any applicable risk-based terms and conditions necessary to protect human health and the environment.

4. The failure to timely submit a Class 3 Permit Modification to TCEQ and EPA within the deadline set forth in Paragraph 69.B.1 shall result in the termination of the Respondents' authorization to operate the Reconfigured TDU on that date unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

5. By no later than three and one-half years (42 months) from the effective date of this CAFO, the Respondents must complete all permitting requirements and obtain issuance from the TCEQ of a final RCRA Subpart X permit for the TDU as a Subpart X – Miscellaneous Unit in accordance with 30 T.A.C. § 335.152(a)(16) [40 C.F.R. Part 264, Subpart X], 30 T.A.C. Chapter 305 [40 C.F.R. §§ 270.10 – 270.14, 270.19, 270.23, and 270.30 – 270.33], and which

incorporates the appropriate requirements of 40 C.F.R. Part 264, Subparts I through O and AA through CC, 40 C.F.R. Part 270, and 40 C.F.R Part 63, Subpart EEE. In the event that TCEQ does not issue a RCRA Subpart X permit for the Reconfigured TDU as described above by the above deadline, the Respondents' authorization to operate the Reconfigured TDU terminates on that date, unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

C. Compliance Demonstration Test

1. The Respondents shall perform a compliance demonstration test (CDT) in accordance with the approved CDT Plan, which is attached as Appendix C and incorporated by reference into the CAFO. The CDT requires the Respondents to demonstrate compliance with the emissions limits of 40 C.F.R. § 63.1219(b) set forth in Paragraph C.5, the destruction and removal efficiency standard of 40 C.F.R. § 63.1219(c)(1) set forth in Paragraph C.4, and establish limits for the operating parameters set forth in Paragraph 69.C.6 (Appendix 1, Table C).

2. Within sixty (60) days of the effective date of this CAFO, the Respondents shall submit to EPA for approval, with a copy to TCEQ, a Quality Assurance Project Plan (QAPP) for the CDT. The QAPP shall be prepared in accordance with the EPA Region 6 Guidance "Quick Reference Guide, Test Burn Program Planning for Hazardous Waste Combustion (HWC) Units" dated August 6, 2012. The Respondents shall implement the QAPP as approved or modified by EPA.

3. The Respondents shall implement the CDT in accordance with Appendix 3 within ninety (90) days after reconfiguration of the TDU pursuant to Paragraph 69.A.8 of this CAFO.

4. During the CDT, the Respondents must achieve a destruction and removal efficiency (DRE) of 99.99% for toluene, the designated principle organic hazardous constituent (POHC). The DRE shall be calculated in accordance with 40 C.F.R. § 63.1219(c)(1).

5. The emission limits that must be met during the CDT are set forth in 40 C.F.R. § 63.1219(b).

6. The operating parameters limits that will be established during the CDT are set forth in Appendix 1, Table C.

7. The Respondents must not exceed the emission limits set forth in 40 C.F.R. § 63.1219(b), and must achieve a DRE of 99.99% for toluene [as set forth in 40 C.F.R. § 63.1219(c)] for all three runs in order to have a successful CDT. If the Respondents determine, based on the results of analyses of stack samples, that they have exceeded any emission standard or failed to meet the DRE requirement during any of the three runs, they must immediately cease processing hazardous waste in the Reconfigured TDU. The Respondents must make this determination within forty-five (45) days following completion of the CDT. The Respondents may not resume operation of the Reconfigured TDU until the Respondents have submitted and received EPA approval of a revised CDT plan, at which time operations can resume to demonstrate compliance with the emission limits and DRE requirements during all of the three runs.

8. All analyses required by the CDT plan shall be performed by a NELAC accredited laboratory or by a laboratory pre-approved by TCEQ.

9. Within ninety (90) days from completion of the CDT, the Respondents shall submit a CDT Report to EPA and TCEQ prepared in accordance with requirements in the CDT Plan, documenting compliance with the DRE standard and emission limits set forth in Paragraphs 69.C.4 and 69.C.5, and identifying operating parameter limits and AWFCO settings for the parameters set forth in Appendix 1, Table C. The DRE standard, emission limits, operating parameter limits, and the AWFCO settings shall also be set forth in a separate Appendix entitled

"Reconfigured TDU Compliance Standards". All data collected during the CDT (including, but not limited to, field logs, chain-of-custody documentation, monitoring data, sampling and analytical results, and any other data or calculations supporting the emissions calculations or operating parameter limits) must be submitted to EPA and TCEQ as part of the CDT Report. However, information in the CDT Report that is emissions data or a standard or limitation cannot be claimed as CBI. 40 C.F.R. § 2.301(e). If the Report contains any information that is claimed CBI, the Respondents shall provide a redacted version with all CBI deleted.

10. As of the date of the submission of the CDT Report, the Respondent shall comply with all operating requirements set forth in the "Reconfigured TDU Compliance Standards", unless otherwise notified by EPA.

11. EPA will review the CDT Report. EPA will make a finding concerning compliance with the emissions standards, DRE requirements, and other requirements of the CDT. If EPA determines that the Respondents have met all the requirements, it shall issue a Finding of Compliance to the Respondents. If EPA determines that the Respondents did not meet all of the requirements, it shall issue a Finding of Non-Compliance. Subject to Paragraph 69.C.7 of this CAFO, the issuance of a Finding of Non-Compliance by EPA shall result in the termination of the Respondents' authorization to operate the Reconfigured TDU on that date.

12. The failure to timely submit a CDT Report to EPA and TCEQ within ninety (90) days from completion of the CDT shall result in the termination of the Respondents' authorization to operate the Reconfigured TDU on that date, unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

D. Compliance with 40 C.F.R. § 261.6(a)(3)(iv)(C)

1. Unless the TDU and the tanks identified in Paragraph 20 are authorized by the RCRA Permit Modification required by Section III.B of this CAFO (or any subsequent permit amendment) to receive wastes that do not meet the requirements set forth in 40 C.F.R. § 261.6(a)(3)(iv)(C), feedstock for the oil reclamation unit shall consist only of non-hazardous waste, and oil-bearing hazardous waste from petroleum refining, production, and transportation practices. Oil-bearing hazardous waste from petroleum refining, production, or transportation practices includes the following listed hazardous waste from specific Petroleum Refining Sources (K049, K050, K051, K052, K169, and K170). Also acceptable is oil-bearing hazardous waste from processes which meet the definition of the following Standard Industrial Classification (SIC) codes and corresponding North American Industry Classification System (NAICS) codes (i.e., petroleum refining, production, and transportation practices) as follows:

SIC Code	SIC Description	NAICS Code	NAICS Title
1311	Crude Petroleum & Natural Gas	211111	Crude Petroleum and Natural Gas Extraction
1321	Natural Gas Liquids	211112	Natural Gas Liquid Extraction
1381	Drilling Oil & Gas Wells	213111	Drilling Oil and Gas Wells
1382	Oil & Gas Field Exploration Services (except geophysical mapping & surveying)	213112	Support Activities for Oil & Gas Operations
1389	Oil and Gas Field Services, NEC (except construction of field gathering lines, site preparation and related construction activities performed on a contract or fee basis)	213112	Support Activities for Oil and Gas Operations
2911	Petroleum Refining	324110	Petroleum Refineries
4612	Crude Petroleum Pipelines	486110	Pipeline Transportation of Crude Oil
4613	Refined Petroleum Pipelines	486910	Pipeline Transportation of Refined Petroleum Products

4789	Transportation Services, NEC (pipeline terminals and stockyards for transportation)	488999	All Other Support Activities for Transportation
4922	Natural Gas Transmission	486210	Pipeline Transportation of Natural Gas
4923	Natural Gas Transmission and Distribution (distribution)	221210	Natural Gas Distribution
4923	Natural Gas Transmission and Distribution (transmission)	486210	Pipeline Transportation of Natural Gas
5171	Petroleum Bulk Stations and Terminals (except petroleum sold via retail method)	488999	All Other Support Activities for Transportation
5172	Petroleum and Petroleum Products Wholesalers, Except Bulk Stations and Terminals (merchant wholesalers)	424720	Petroleum and Petroleum Products Merchant Wholesalers (except Bulk Stations and Terminals)

Nothing in this Section III.D shall be construed to preclude Respondents from seeking authorization from the TCEQ to process oil-bearing materials outside the scope of 40 C.F.R. § 261.6(a)(3)(iv)(C). However, the definition of oil-bearing hazardous waste from petroleum refining, production, or transportation practices set forth in this Paragraph shall remain the same.

2. Using feedstock from processes meeting the definition of the aforementioned SIC/NAICS Codes does not constitute compliance with 40 C.F.R. § 261.6(a)(3)(iv)(C) or this CAFO. The Respondents are required to make a separate determination whether the hazardous waste in question is "oil-bearing," and that the hazardous waste was originally generated from petroleum refining, production, or transportation practices. The Respondents shall request that this provision be placed in the issued RCRA permit as applicable to the oil reclamation unit operation under 40 C.F.R. § 261.6(a)(3)(iv)(C).

E. TCEQ Submission, Revision, and Approval Process

1. For the Class 3 RCRA Permit Modification required be submitted to TCEQ for approval under this CAFO, TCEQ will review the application in accordance with 30 T.A.C.

§§ 281.3(c), 281.18 and 281.19(a) and (b). The Respondents must respond to any Notice of Deficiency (NOD), with a copy to EPA, within the time period specified by the TCEQ. In the event that the Respondents fail to submit a timely and complete NOD response, the Respondents' authorization to operate the TDU shall terminate on the NOD response deadline unless that deadline has been extended pursuant to Section IV.F (Force Majeure).

F. Additional Conditions

1. To comply with this CAFO, the Respondents must obtain a RCRA permit for the TDU as a Subpart X – Miscellaneous Unit in accordance with 30 T.A.C. § 335.152(a)(16) [40 C.F.R. Part 264, Subpart X], 30 T.A.C. Chapter 305 [40 C.F.R. §§ 270.10 – 270.14, 270.19, 270.23, and 270.30 – 270.33], and which incorporates the appropriate requirements of 40 C.F.R. Part 264, Subparts I through O and AA through CC, and 40 C.F.R. Part 270, and 40 C.F.R Part 63, Subpart EEE.

2. The Respondents may seek relief under the provisions of Section IV.F of this CAFO (Force Majeure) for any delay in the performance of any such obligations resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if the Respondent has submitted a timely and complete application and has taken all other actions necessary to obtain such permit or approval.

G. EPA Review and Comment on RCRA Permit

1. Nothing in this CAFO shall limit EPA's rights under applicable environmental laws or regulations, including, but not limited to, Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925(c)(3), 40 C.F.R. § 270.32 and 40 C.F.R. § 271.19, to review, comment, and incorporate appropriate requirements of 40 C.F.R. Parts 264, Subparts I through O and Subparts AA through CC, and

40 C.F.R. Part 63, Subpart EEE directly into the permit or establish other permit conditions that are based on those parts; or take action under Section 3008(a)(3) of RCRA, 42 U.S.C. § 6928(a)(3), against the Respondents on the ground that the RCRA permit for the Reconfigured TDU does not comply with a condition that the EPA Region 6 Regional Administrator in commenting on the permit application or draft permit stated was necessary to implement approved State program requirements, whether or not that condition was included in the issued permit. If the Respondent disputes an action taken by EPA pursuant to 40 C.F.R. § 270.32 or 40 C.F.R. § 271.19, the Defendant may invoke Dispute Resolution in accordance with Section IV.E of this CAFO.

H. Submissions

In all instances in which this Compliance Order requires written submissions to EPA and TCEQ, each submission must be accompanied by the following certification:

> "I certify under penalty of law to the best of my knowledge and belief, that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

All submissions must be certified on behalf of the Respondent(s) by the signature of a person authorized to sign a permit application or a report under 40 C.F.R. § 270.11.

I. Monitoring, Recordkeeping, and Record Retention Requirements

1. Upon the effective date of this CAFO, all interim operating parameters (Appendix 1, Table A), shakedown operating parameters (Appendix 1, Table B), and final operating parameters limits (Appendix 1, Table C and Paragraph 69.C.6) subject to AWFCO limits shall be monitored by the facility's Continuous Process Monitoring System (CPMS), which records data once per minute in an electronic data log (DLG). In addition, the Respondents shall keep copies

of all documents relating to compliance with the operating parameters limits not monitored by the CPMS, and all other documents relating to compliance with Section III of this CAFO. All records, including electronic records, shall be kept for a period of one year after termination of the CAFO. These monitoring and recordkeeping requirements are in addition to any other monitoring and/or recordkeeping requirements required by federal, state, or local laws, regulations, or permits. This information shall be made available to EPA and TCEQ upon request.

2. In addition, the Respondents shall preserve, for a period of one year after termination of the CAFO, all records and documents in its possession or in the possession of its divisions, employees, agents, contractors, or successors which in any way relate to this CAFO regardless of any document retention policy to the contrary. This information shall be made available to EPA and TCEQ upon request.

J. EPA Approval of Submissions

EPA will review the plans set forth in Paragraphs 69.A.11 (if applicable) and 69.C.2, and notify the Respondents in writing of EPA's approval or disapproval of the plan or any part thereof. Within the time specified, the Respondents shall address the deficiencies and submit a revised plan. EPA will approve, disapprove, or modify the revised submittal. EPA approved plans shall be incorporated by reference into this CAFO.

IV. TERMS OF SETTLEMENT

A. CIVIL PENALTY

70. Pursuant to the authority granted in Section 3008 of RCRA, 42 U.S.C. § 6928, and upon consideration of the entire record herein, including the Findings of Fact and Conclusions of Law, which are hereby adopted and made a part hereof, and upon consideration of the

seriousness of the alleged violations, the Respondents' good faith efforts to comply with the applicable regulations, and the June 2003 RCRA Civil Penalty Policy, it is hereby **ORDERED** that the Respondent U.S. Ecology Texas, Inc. be assessed a civil penalty of **ONE HUNDRED SIXTY-FIVE THOUSAND, SIX HUNDRED FIFTY-SEVEN DOLLARS ($165,657)**, and the Respondent TD*X Associates L.P. be assessed a civil penalty of **SIX HUNDRED TWENTY-TWO THOUSAND, FOUR HUNDRED SIXTY-THREE DOLLARS ($622,463).** The Respondent USET shall pay the assessed civil penalty within thirty (30) days of the effective date of this CAFO. The Respondent TD*X Associates L.P. shall pay the assessed civil penalty in four (4) payments as follows:

Payment No. 1: $157,978.35 within thirty (30) days of the effective date of this CAFO.

Payment No. 2: $157,978.35 ($153,268.99 civil penalty plus interest of $4,709.36) within one year of the effective date of this CAFO.

Payment No. 3: $157,978.35 ($154,822.97 civil penalty plus interest of $3,155.38) within two years of the effective date of this CAFO.

Payment No. 4: $157,978.34 ($156,392.69 civil penalty plus interest of $1,585.65) within three years of the effective date of this CAFO.

71. The Respondents shall pay the assessed civil penalty by certified check, cashier's check, or wire transfer, made payable to "Treasurer, United States of America, EPA - Region 6". Payment shall be remitted in one of three (3) ways: regular U.S. Postal mail (including certified mail), overnight mail, or wire transfer. For regular U.S. Postal mail, U.S. Postal Service certified mail, or U.S. Postal Service express mail, the check(s) should be remitted to:

U.S. Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Center
P.O. Box 979077
St. Louis, MO 63197-9000

For overnight mail (non-U.S. Postal Service, e.g. Fed Ex), the check(s) should be remitted to:

U.S. Bank
Government Lockbox 979077
US EPA Fines & Penalties
1005 Convention Plaza
SL-MO-C2-GL
St. Louis, MO 63101
Phone No. (314) 418-1028

For wire transfer, the payment should be remitted to:

Federal Reserve Bank of New York
ABA: 021030004
Account No. 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York, NY 10045
Field Tag 4200 of the Fedwire message should read
"D 68010727 Environmental Protection Agency"

PLEASE NOTE: Docket numbers RCRA-06-2012-0936 (Respondent USET) and RCRA-06-2012-0937 (Respondent TD*X) shall be clearly typed on the respective checks to ensure proper credit. If payment is made by check, the check shall also be accompanied by a transmittal letter and shall reference the Respondent's name and address, the case name, and docket number of the CAFO. If payment is made by wire transfer, the wire transfer instructions shall reference the Respondent's name and address, the case name, and docket number of the CAFO. The Respondents shall also send a simultaneous notice of such payment, including a copy of the check and transmittal letter, or wire transfer instructions to the following:

Chief, Compliance Enforcement Section (6EN-HE)
Hazardous Waste Enforcement Branch
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Lorena Vaughn
Regional Hearing Clerk (6RC-D)
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

The Respondents' adherence to this request will ensure proper credit is given when penalties are received in the Region.

72. The Respondents agree not to claim or attempt to claim a federal income tax deduction or credit covering all or any part of the civil penalty paid to the United States Treasurer.

73. Pursuant to 31 U.S.C. § 3717 and 40 C.F.R. § 13.11, unless otherwise prohibited by law, EPA will assess interest and late payment penalties on outstanding debts owed to the United States and a charge to cover the costs of processing and handling a delinquent claim. Interest on the civil penalty assessed in this CAFO will begin to accrue thirty (30) days after the effective date of the CAFO and will be recovered by EPA on any amount of the civil penalty that is not paid by the respective due date. Interest will be assessed at the rate of the United States Treasury tax and loan rate in accordance with 40 C.F.R. § 13.11(a). Moreover, the costs of the Agency's administrative handling of overdue debts will be charged and assessed monthly throughout the period the debt is overdue. *See* 40 C.F.R. § 13.11(b).

74. EPA will also assess a $15.00 administrative handling charge for administrative costs on unpaid penalties for the first thirty (30) day period after the payment is due and an additional $15.00 for each subsequent thirty (30) day period that the penalty remains unpaid. In addition, a

penalty charge of up to six percent per year will be assessed monthly on any portion of the debt which remains delinquent more than ninety (90) days. *See* 40 C.F.R. § 13.11(c). Should a penalty charge on the debt be required, it shall accrue from the first day payment is delinquent. *See* 31 C.F.R. § 901.9(d). Other penalties for failure to make a payment may also apply.

B. PARTIES BOUND

75. The provisions of this CAFO shall apply to and be binding upon the parties to this action, their officers, directors, agents, employees, successors, and assigns. The undersigned representative of each party to this CAFO certifies that he or she is fully authorized by the party whom he or she represents to enter into the terms and conditions of this CAFO and to execute and to legally bind that party to it.

C. ADDITIONAL REQUIREMENTS

76. The Respondents shall undertake the following additional requirements:

A. The Respondents agree that the oil reclamation unit and the TDU are subject to the requirements of 40 C.F.R. Part 61, Subpart FF.

B. Within thirty (30) days of the effective date of the CAFO, the Respondents shall submit to EPA a certification that the following equipment in the oil reclamation unit and the TDU is not in "volatile hazardous air pollutant" (VHAP) service, as that term is defined by 40 C.F.R. § 61.241:

1. pumps;
2. compressors;
3. pressure relief devices;
4. sampling connection systems;
5. open-ended valves or lines;

6. valves;

7. connectors;

8. surge control vessels;

9. bottoms receivers; and

10. control devices and systems.

This certification shall be submitted in accordance with Paragraphs 76.H and 76.I.

C. Pursuant to 40 C.F.R. § 61.354(c), as of the effective date of this CAFO, the Respondents shall install, calibrate, maintain, and operate according to manufacturer's specifications, devices to continuously monitor the control devices operations required by 40 C.F.R. § 61.349.

D. Pursuant to 40 C.F.R. § 61.345(a), within 180 days of the effective date of the CAFO, the Respondents shall install, operate, and maintain covers on Bins 1, 2, 3, 4, and the Centrifuge solid bins that meet the requirements of 40 C.F.R. § 61.345(a)(1). The cover and openings shall be in a closed, sealed position at all times that waste is in the container except when it is necessary to use the opening for waste loading, removal, inspection or sampling, as required by 40 C.F.R. § 61.345(a)(1)(ii). The Respondents shall monitor the cover and all openings for no detectable emissions initially and thereafter at least once per year by the methods specified in 40 C.F.R. § 61.355(h).

E. The Respondents shall use a submerged fill pipe when transferring waste into the containers by pumping, as required by 40 C.F.R. § 61.345(a)(2).

F. Within ninety (90) days after the reconfiguration of the TDU pursuant to Paragraph 69.A.8 of this CAFO, the Respondents shall conduct performance tests for the TOU and the carbon adsorption system to demonstrate compliance with the requirements of 40 C.F.R.

§ 61.349. The performance tests shall be conducted in accordance with the requirements of 40 C.F.R. § 61.355. A copy of the performance test results shall be submitted to EPA within ninety (90) days of completion of the performance tests. The performance tests results shall be submitted in accordance with Paragraphs 76.H and 76.I.

G. Within 210 days of the effective date of the CAFO, the Respondents shall submit a written report to EPA showing compliance with Paragraphs 76.C, 76.D, and 76.E.

H. The certification and report identified in this Section must be accompanied by the following certification:

> "I certify under penalty of law to the best of my knowledge and belief, that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

All submissions must be certified on behalf of the Respondent(s) by the signature of a person authorized to sign a permit application or a report under 40 C.F.R. § 270.11.

I. The certification and report required under this Section shall be sent to the following:

Craig Lutz
Toxics Enforcement Section (6EN-AT)
Compliance Assurance and Enforcement Division
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

D. STIPULATED PENALTIES

77. In addition to any other remedies or sanctions available to EPA, the Respondent(s) shall pay stipulated penalties in the following amounts for each day during which each failure or refusal to comply continues:

a. Failure to Timely Submit Reports or Plans - Paragraphs 69.A.11, 69.A.12, and 69.C.2

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 1,000
16th through 30th day	$ 1,500
31st day and beyond	$ 2,500

b. Failure to Comply with Certain Interim Operating Requirements – Paragraphs 69.A.5, 69.A.6, 69.A.7 (installation of AWFCO only), 69A.8, and 69.A.11

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 1,500
16th through 30th day	$ 2,500
31st day and beyond	$ 5,000

c. Failure to Comply with any Other Provision of Section III of this CAFO

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 500
16th through 30th day	$ 1,000
31st day and beyond	$ 1,500

d. Failure to Comply with Additional Requirements – Section IV.C

Period of Noncompliance	Penalty Per Violation Per Day
1st through 15th day	$ 1,500
16th through 30th day	$ 2,500
31st day and beyond	$ 5,000

Penalties shall accrue from the date of the noncompliance until the date the violation is corrected, as determined by EPA.

78. The Respondent(s) shall pay stipulated penalties not more than fifteen (15) days after receipt of written demand by EPA for such penalties. Method of payment shall be in accordance with the provisions of Paragraph 71 herein. Interest and late charges shall be paid as stated in Paragraphs 73 - 74 herein.

79. Nothing in this agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of the Respondent(s) violation of this CAFO or of the statutes and regulations upon which this agreement is based, or for the Respondent's violation of any applicable provision of law.

E. DISPUTE RESOLUTION

80. If the Respondents object to any decision or directive of EPA in regard to Section III or IV.C, the Respondents shall notify each other and the following persons in writing of its objections, and the basis for those objections, within thirty (30) calendar days of receipt of EPA's decision or directive:

Associate Director
Hazardous Waste Enforcement Branch (6EN-H)
Compliance Assurance and Enforcement Division
U.S. EPA - Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

Chief, RCRA Enforcement Branch (6RC-ER)
Office of Regional Counsel
U.S. EPA - Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

81. The Associate Director of the Hazardous Waste Enforcement Branch or his/her designee (Associate Director), and the Respondents shall then have an additional thirty (30) calendar days from EPA's receipt of the Respondents' written objections to attempt to resolve the dispute. If an agreement is reached between the Associate Director and the Respondents, the agreement shall be reduced to writing and signed by the Associate Director and the Respondents and incorporated by reference into this CAFO.

82. If no agreement is reached between the Associate Director and the Respondents within that time period, the dispute shall be submitted to the Director of the Compliance

Assurance and Enforcement Division or his/her designee (Division Director). The Division Director and the Respondents shall then have a second 30-day period to resolve the dispute. If an agreement is reached between the Division Director and the Respondents, the resolution shall be reduced to writing and signed by the Division Director and the Respondents and incorporated by reference into this CAFO. If the Division Director and the Respondents are unable to reach agreement within this second 30-day period, the Division Director shall provide a written statement of EPA's decision to the Respondents, which shall be binding upon the Respondents and incorporated by reference into the CAFO.

83. If the Dispute Resolution process results in a modification of this CAFO, the modified CAFO must be approved by the Regional Judicial Officer and filed pursuant to Section IV.H (Modifications).

84. The invocation of dispute resolution procedures under this Section shall not extend, postpone, or affect in any way, any obligations of the Respondents under this CAFO, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first day of noncompliance, but payment shall be stayed pending resolution of the dispute. If the Respondents do not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section IV.D.

F. FORCE MAJEURE

85. A "force majeure event" is any event beyond the control of the Respondents, their contractors, or any entity controlled by the Respondents that delays the performance of any obligation under this CAFO despite the Respondents' best efforts to fulfill the obligation. "Best efforts" includes anticipating any potential force majeure event and addressing the effects of any such event (a) as it is occurring and (b) after it has occurred, to prevent or minimize any resulting

delay to the greatest extent possible. "Force Majeure" does not include the Respondents' financial inability to perform any obligation under this CAFO, but does include any delays attributable to the TCEQ's permitting process and the conduct of the contested case hearing.

86. The Respondents shall provide notice orally or by electronic or facsimile transmission as soon as possible, but not later than 72 hours after the time the Respondents first knew of, or by the exercise of due diligence, reasonably should have known of, a claimed force majeure event. The Respondents shall also provide written notice, as provided in Section IV.G of this CAFO, within seven days of the time the Respondents first knew of, or by the exercise of due diligence, reasonably should have known of, the event. The notice shall state the anticipated duration of any delay; its cause(s); the Respondents' past and proposed actions to prevent or minimize any delay; a schedule for carrying out those actions; and the Respondents' rationale for attributing any delay to a force majeure event. Failure to give such notice shall preclude the Respondents from asserting any claim of force majeure.

87. The Respondent also shall provide notice orally or by electronic or facsimile transmission to the other Respondent not later than 24 hours after the time Respondent first knew of, or by the exercise of due diligence, reasonably should have known of, a claimed force majeure event, provided that the failure to give such notice shall not limit either Respondent's responsibilities under this CAFO.

88. If the Complainant agrees that a force majeure event has occurred, the Complainant may agree to extend the time for the Respondents to perform the affected requirements for the time necessary to complete those obligations. An extension of time to perform the obligations affected by a force majeure event shall not, by itself, extend the time to perform any other

obligation. Where the Complainant agrees to an extension of time, the appropriate modification shall be made pursuant to Section IV.H of this CAFO.

89. If the Complainant does not agree that a force majeure event has occurred, or does not agree to the extension of time sought by the Respondents, the Complainant's position shall be binding, unless the Respondents invokes Dispute Resolution under Section IV.D of this CAFO. In any such dispute, the Respondents bear the burden of proving, by a preponderance of the evidence, that each claimed force majeure event is a force majeure event; that the Respondents gave the notice required by the paragraph above, that the force majeure event caused any delay the Respondents' claimed was attributable to that event; and that the Respondents exercised their reasonable best efforts to prevent or minimize any delay caused by the event. If the Respondents carry this burden, the delay at issue shall be deemed not to be a violation of the affected obligation of this CAFO.

G. NOTIFICATION

90. Unless otherwise specified elsewhere in this CAFO, whenever notice is required to be given, whenever a report or other document is required to be forwarded by one party to another, or whenever a submission or demonstration is required to be made, it shall be directed to the individuals specified below at the addresses given (in addition to any action specified by law or regulation), unless these individuals or their successors give notice in writing to the other parties that another individual has been designated to receive the communication:

Complainant:

Chief, Compliance Enforcement Section (6EN-HE)
Hazardous Waste Enforcement Branch
U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Respondent U.S. Ecology Texas, Inc.:

Mary Reagan
McGinnis, Lochridge & Kilgore, L.L.P.
600 Congress Avenue
Suite 2100
Austin, Texas 78701

Respondent TD*X Associates, L.P.:

J.D. Head
Fritz, Bryne, Head & Harrison, PLLC
98 San Jacinto Boulevard
Suite 2000
Austin, TX 78701

Texas Commission on Environmental Quality

Section Manager
Industrial and Hazardous Permits Section
Waste Permits Division
Texas Commission on Environmental Quality
P.O. Box 13087 MC 130
Austin, TX 78711

H. MODIFICATION

91. The terms, conditions, and compliance requirements of this CAFO may not be modified or amended except as otherwise specified in this CAFO, or upon the written agreement of the Complainant and Respondent(s), and approved by the Regional Judicial Officer, and such modification or amendment being filed with the Regional Hearing Clerk.

I. RETENTION OF ENFORCEMENT RIGHTS

92. EPA does not waive any rights or remedies available to EPA for any other violations by the Respondents of Federal or State laws, regulations, or permitting conditions.

93. Except as herein provided, nothing in this CAFO shall limit the power and authority of EPA or the United States to take, direct, or order all actions to protect public health, welfare, or the environment, or prevent, abate or minimize an actual or threatened release of hazardous

substances, pollutants, contaminants, hazardous substances on, at or from the Respondent USET's facility or Respondent TD*X's oil reclamation unit and related equipment. Furthermore, nothing in this CAFO shall be construed or to prevent or limit EPA's civil and criminal authorities, or that of other Federal, State, or local agencies or departments to obtain penalties or injunctive relief under other Federal, State, or local laws or regulations.

94. The Complainant reserves all legal and equitable remedies available to enforce the provisions of this CAFO. This CAFO shall not be construed to limit the rights of the EPA or United States to obtain penalties or injunctive relief under RCRA or under other federal or state laws, regulations, or permit conditions.

95. In any subsequent administrative or judicial proceeding initiated by the Complainant or the United States for injunctive relief, civil penalties, or other appropriate relief relating to this Facility or the oil reclamation unit, the Respondents shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the Complainant or the United States in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to this CAFO.

96. This CAFO is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. The Respondents are responsible for achieving and maintaining complete compliance with all applicable federal, State, and local laws, regulations, and permits. The Respondents' compliance with this CAFO shall be no defense to any action commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The Complainant does not warrant or aver in any manner that the Respondents' compliance with any aspect of this

CAFO will result in compliance with provisions of the RCRA or with any other provisions of federal, State, or local laws, regulations, or permits.

J. INDEMNIFICATION OF EPA

97. Neither EPA nor the United States Government shall be liable for any injuries or damages to person or property resulting from the acts or omissions of the Respondents, their officers, directors, employees, agents, receivers, trustees, successors, assigns, or contractors in carrying out the activities required by this CAFO, nor shall EPA or the United States Government be held out as a party to any contract entered into by the Respondents in carrying out the activities required by this CAFO.

K. COSTS

98. Each party shall bear its own costs and attorney's fees. Furthermore, each Respondent specifically waives its right to seek reimbursement of its costs and attorney's fees under 5 U.S.C. § 504 and 40 C.F.R. Part 17.

L. TERMINATION

99. At such time as the Respondents believe they have completed all of the requirements of this CAFO, they may request that EPA concur whether all of the requirements of this CAFO have been satisfied. Such request shall be in writing and shall provide the necessary documentation to establish whether there has been full compliance with the terms and conditions of this CAFO. EPA will respond to said request in writing within ninety (90) days of receipt of the request. This CAFO shall terminate when all actions required to be taken by this CAFO have been completed, and the Respondents have been notified by the EPA in writing that this CAFO has been satisfied and terminated.

M. EFFECTIVE DATE

100. This CAFO, and any subsequent modifications, become effective upon filing with the Regional Hearing Clerk.

THE UNDERSIGNED PARTIES CONSENT TO THE ENTRY OF THIS CONSENT AGREEMENT AND FINAL ORDER:

FOR THE RESPONDENT:

Date: 9/27/12

US Ecology Texas, Inc.

FOR THE RESPONDENT:

Date: September 26, 2012

Carl R Palmer
TD*X Associates L.P.

FOR THE COMPLAINANT:

Date: 10·03·12

John Blevins
Director
Compliance Assurance and
Enforcement Division

FINAL ORDER

Pursuant to the Section 3008 of RCRA, 42 U.S.C. § 6928, and the Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties, 40 C.F.R. Part 22, the foregoing Consent Agreement is hereby ratified. This Final Order shall not in any case affect the right or EPA or the United States to pursue appropriate injunctive relief or other equitable relief for criminal sanctions for any violations of law. This Final Order shall resolve only those causes of action alleged herein. Nothing in this Final Order shall be construed to waive, extinguish or otherwise affect the Respondents' (or their officers, agents, servants, employees, successors, or assigns) obligation to comply with all applicable federal, state, and local statutes and regulations, including the regulations that were the subject of this action. The Respondents are ordered to comply with the Compliance Order and terms of settlement as set forth in the Consent Agreement. Pursuant to 40 C.F.R. § 22.31(b), this Final Order shall become effective upon filing with the Regional Hearing Clerk.

Date: 10/4/12

Patrick Rankin
Regional Judicial Officer

APPENDIX 1 – OPERATING PARAMETERS

TABLE A

TDU OIL RECLAMATION SYSTEM INTERIM REQUIREMENTS PRIOR TO TOU INSTALLATION

Tag No.	Equipment Operating Parameter	Operating Parameter Limit	Compliance Basis
TT-18/19	TDU Dryer, Minimum Combustion Chamber Temperature	Maintain Temperature > 1,400°F	AWFCO: CPMS[1], 60-sec time delay
PT-1	TDU Dryer, Maximum Internal Pressure	Maintain Pressure < 0.00" W.C.	AWFCO: CPMS, 6-min Rolling Average (RA)[2]
OE-1	Purge Vent Gas Stream Maximum O_2 Concentration	O_2 < 7%	AWFCO: CPMS, 60-sec time delay
FE-101	Maximum Purge Vent Rate	Purge Vent Rate < 180 scfm	AWFCO: CPMS, Hourly Rolling Average (HRA)[3]
M-100	Minimum Percent Excess Air, Operation of Purge Vent Injector Air Supply	Purge Vent Air Supply > 20% Excess Air	AWFCO: CPMS, Tuning of Combustion Airflow
TE-28	Maximum Condenser System Exhaust Temperature	Temperature < 120°F	AWFCO: CPMS, HRA
	HEPA Filter Installed and Pressure Change Monitored to Ensure Integrity of Filter	Installed and Δ Pressure Monitoring	Installation Check; Δ Pressure Monitored Once Per Shift
	Maximum TDU Feed Mercury Concentration	[Hg] < 50 ppm/Bin	Blending Protocols & Documentation[4]
	Maximum TDU Feed Organic Halide Concentration	[Total Organic Halides] < 1,500 ppm/Bin	Blending Protocols & Documentation

[1] Continuous Process Monitoring System – See Paragraph 69.I of CAFO.

[2] Previous six 1-minute readings are summed and divided by six.

[3] 40 C.F.R. §§ 63.1209(b)(5).

[4] See Paragraph 69.A.3 of the CAFO.

TABLE B

TDU OIL RECLAMATION SYSTEM REQUIREMENTS AFTER TOU INSTALLATION PRE-COMPLIANCE DEMONSTRATION TEST OPERATIONS

Tag No.	Equipment Operating Parameter	Shakedown (Pre-Test) OPL	Compliance Basis
PT-1	TDU Dryer, Maximum Internal Pressure	Maintain Pressure < 0.00" W.C.	AWFCO: CPMS[5], 6-min RA[6]
M-05	TDU Dryer, Cylinder Rotation On	Motor Operating	AWFCO: CPMS, Instantaneous
M-18	Product Discharge System	Motor Operating	AWFCO: CPMS, Instantaneous
M-21	Recirculation Blower Operating	Motor Operating	AWFCO: CPMS, Instantaneous
TT-121	TOU, Minimum Combustion Chamber Temperature	Maintain Temperature > 1,400°F	AWFCO: CPMS, HRA[7]
KY-110	TOU, Minimum Residence Time (Calculated from Purge Vent Flow Rate, Exhaust T, and Air Ratio)	Residence Time > 0.5 seconds	AWFCO: CPMS, HRA
AE-5/ OE-5	TOU Exhaust Gas, Maximum CO Concentration	[CO] < 100 ppmV @ 7% O_2	AWFCO: CEMS for CO, HRA
OE-1	Purge Vent Gas Stream, Maximum O_2 Concentration	[O_2] < 7%	AWFCO: CPMS, Instantaneous
FE-101	Maximum Purge Vent Rate	Vent Flow < 250 scfm	AWFCO: CPMS, HRA
FCV-102	Valve Position to Ensure Purge Vent is not Directed Away from TOU	Valve Closed	AWFCO: CPMS, 60-sec delay
M-121	Minimum Percent Excess Air , Operation of Purge Vent Injector Air Supply	Purge Vent Air Supply > 20% Excess Air	AWFCO: CPMS, Tuning of Combustion Airflow
TE-28	Maximum Condenser System Exhaust Temperature	Maintain Temperature < 120°F	AWFCO: CPMS, HRA

[5] Continuous Process Monitoring System – See Paragraph 69.I of the CAFO.

[6] Previous six 1-minute readings are summed and divided by six.

[7] 40 C.F.R. §§ 63.1209(a)(6) and 63.1209(b)(5).

	HEPA Filter Installed and Pressure Change Monitored to Ensure Integrity of Filter	Installed and Δ Pressure Monitoring	Installation Check; Δ Pressure Monitored Once Per Shift
	Maximum TDU Feed Mercury Concentration	[Hg] < 50 ppm/Bin	Blending Protocols & Documentation[8], Feed Stream Analysis Plan (if applicable)[9]
	Maximum TDU Feed Organic Halide Concentration	[Total Organic Halides] < 1,500 ppm/Bin	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Semi-Volatile Metals Concentration[10]	N/A	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Low-Volatile Metals Concentration[11]	N/A	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)

[8] See Paragraph 69.A.3 of the CAFO.

[9] See Paragraph 69.A.11 of the CAFO.

[10] Semi-volatile metals means a combination of cadmium and lead.

[11] Low-volatile metals means a combination of Arsenic, Beryllium, and Chromium.

TABLE C

TDU OIL RECLAMATION REQUIREMENTS AFTER TOU INSTALLATION POST-COMPLIANCE DEMONSTRATION TEST OPERATIONS

Tag No.	Equipment Operating Parameter	Interim/Final (Post-Test) OPL	Compliance Basis
PT-1	TDU Dryer, Maximum Internal Pressure	Maintain Pressure < 0.00" W.C.	AWFCO: CPMS[12], 6-min RA[13]
M-05	TDU Dryer, Cylinder Rotation On	Motor Operating	AWFCO: CPMS, Instantaneous
M-18	Product Discharge System	Motor Operating	AWFCO: CPMS, Instantaneous
M-21	Recirculation Blower Operating	Motor Operating	AWFCO: CPMS, Instantaneous
TT-121	TOU, Minimum Combustion Chamber Temperature	OPL Established @ > 3-Run Average from CDT	AWFCO: CPMS, HRA[14]
KY-110	TOU, Minimum Residence Time (Calculated from Purge Vent Flow Rate, Exhaust T, and Air Ratio)	Residence Time > 0.5 seconds	AWFCO: CPMS, HRA
AE-5/ OE-5	TOU Exhaust Gas, Maximum CO Concentration	Semi-Annual Testing until Waste Analysis Plan Approved, then Annual Testing	Performance Testing in lieu of CEMS; Waste Analysis Plan based with other OPLs
OE-1	Purge Vent Gas Stream, Maximum O_2 Concentration	$[O_2] < 7\%$	AWFCO: CPMS, Instantaneous
FE-101	Maximum Purge Vent Rate	Vent Flow < 250 scfm	AWFCO: CPMS, HRA
FCV-102	Valve Position to Ensure Purge Vent is not Directed Away from TOU	Valve Closed	AWFCO: CPMS, 60-sec time delay
M-121	Minimum Percent Excess Air, Operation of Purge Vent Injector Air Supply	Purge Vent Air Supply > 20% Excess Air	AWFCO: CPMS, Tuning of Combustion Airflow

[12] Continuous Process Monitoring System – See Paragraph 69.I of CAFO.

[13] Previous six 1-minute readings are summed and divided by six.

[14] 40 C.F.R. §§ 63.1209(a)(6) and 63.1209(b)(5).

TE-28	Maximum Condenser System Exhaust Temperature	OPL Established @ < 3-run Average Based on CDT	AWFCO: CPMS, HRA
	HEPA Filter Installed and Pressure Change Monitored to Ensure Integrity of Filter	Installed and Δ Pressure Monitoring	Installation Check; Δ Pressure Monitored Once Per Shift
	Maximum TDU Feed Mercury Concentration	[Hg] < 50 ppm/Bin	Blending Protocols & Documentation[15], Feed Stream Analysis Plan (if applicable)[16]
	Maximum TDU Feed Organic Halide Concentration	OPL Established as Measured Ratio[17]	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Semi-Volatile Metals Concentration[18]	OPL Established as Measured Ratio[19]	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)
	Maximum TDU Feed Low-Volatile Metals Concentration[20]	OPL Established as Measured Ratio[21]	Blending Protocols & Documentation, Feed Stream Analysis Plan (if applicable)

[15] See Paragraph 69.A.3 of the CAFO.

[16] See Paragraph 69.A.11 of the CAFO.

[17] Maximum TDU Feed Concentration established as a measured ratio (not to exceed 4000 ppm/bin) from emissions data collected during CDT. See plan example calculations.

[18] Semi-volatile metals means a combination of cadmium and lead.

[19] Maximum TDU Feed Concentration established as measured ration from emissions data collected during CDT. See plan example calculations.

[20] Low-volatile metals means a combination of Arsenic, Beryllium, and Chromium.

[21] Maximum TDU Feed Concentration established as measured ratio from emissions data collected during CDT. See plan example calculations.

APPENDIX 2 – BLENDING PROTOCOLS

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT STORED IN FILE ROOM

APPENDIX 3

COMPLIANCE DEMONSTRATION TEST PLAN

CONTAINS CONFIDENTIAL BUSINESS INFORMATION

DOCUMENT STORED IN FILE ROOM

CERTIFICATE OF SERVICE

I hereby certify that on the 4th day of October, 2012, the original and one copy of the foregoing Consent Agreement and Final Order (CAFO) was hand delivered to the Regional Hearing Clerk, U.S. EPA - Region 6, 1445 Ross Avenue, Dallas, Texas 75202-2733, and that true and correct copies of the CAFO were sent to the following by the method indicated below:

For US Ecology Texas, Inc.

Certified Mail – Return Receipt Requested – 7007 0710 0002 1385 1491

Mary Reagan
McGinnis, Lochridge & Kilgore, L.L.P.
600 Congress Avenue, Suite 2100
Austin, Texas 78701

For TD*X Associates LP

Certified Mail – Return Receipt Requested – 7007 0710 0002 1385 1507

J.D. Head
Fritz, Bryne, Head & Harrison, PLLC
98 San Jacinto Boulevard
Suite 2000
Austin, TX 78701

Evan L Pearson

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 Ross Avenue
Dallas, Texas 75202-2733

JUN 2 4 2016

Mr. Estuardo Silva
Louisiana Department of Environmental Quality
Office of Environmental Services
Waste Permits Division
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

RE: Draft Hazardous Waste Modified Operating and Post Closure Permit
Chemical Waste Management, Inc.
7170 John Brannon Road
Carlyss, LA 70665
Permit# LAD00077201-OP-RN-MO-1
AI# 742/PER20140007

Dear Mr. Silva:

EPA has the following comments on the draft Hazardous Waste Operating and Post Closure Permit for the Chemical Waste Management, Inc. facility located at 7170 John Brannon Road, Carlyss, LA 70665 (Draft Permit). Chemical Waste Management, Inc. (Chem Waste) seeks to add two oil recovery units (ORUs), two thermal desorber units (TDUs), and 19 associated tanks to its operations at its Carlyss, Louisiana facility. The ORUs will be utilized to separate recoverable oils from drilling fluids, refinery tank bottoms, commercially exempt waste, and other non-hazardous and hazardous waste. The TDUs will treat contaminated tank bottoms, sludge, catalyst slurry oil, and other non-hazardous and hazardous waste. The TDUs will be designed to separate organic constituents from a waste stream by condensing the organic components, which would allow for the recovery or disposal of the contaminants. The non-condensable gases will be routed to a thermal oxidizer unit (TOU). The TDU is proposed to be permitted as a miscellaneous unit.

Condition II.E.25.e of the Draft Permit provides that "[o]ne hundred and eighty (180) days before planned construction, the Permittee must submit finalized engineering specifications and operating parameters for the proposed Thermal Desorber Units to the Administrative Authority for approval. The information submitted must comply with the requirements of this permit and L.A.C. 33:V. Chapter 32, and all applicable regulations." Chapter 32 is entitled "Miscellaneous Units", and is the State equivalent of 40 C.F.R. Part 264, Subpart X. Due to the absence of any proposed engineering specifications, performance test, operating conditions, operating parameters, monitoring and recordkeeping requirements, we have identified permit requirements for the TDU and TOU below that we believe are required by the regulations for operation of the TDU and TOU.

How the TDU and TOU are permitted determine the appropriate permit requirements for the units. The material being treated in the TDU and the TOU is already a hazardous waste. Thermal treatment after a material becomes a hazardous waste is fully regulated under RCRA, 54 Fed. Reg. 50968, 50973 (December 11, 1989). The combustion of the non-condensable gases in the TOU meets the

definition of "thermal treatment" in L.A.C. 33:V.109 [40 C.F.R. § 260.10] and thus requires a RCRA permit. The TOU would meet the definition of incinerator in L.A.C. 33:V.109 [40 C.F.R. § 260.10] (an enclosed device that uses controlled flame combustion). However, rather than permitting the TOU as an incinerator, LDEQ could permit the TDU and TOU together as a miscellaneous unit under L.A.C. 33:V. Chapter 32 [40 C.F.R. Part 264, Subpart X]. If this occurs, then LDEQ is required to include in the permit requirements from L.A.C. 33:V. Chapters 3, 5, 7, 17, 19, 21, 23, 25, 27, 29, 31, 4301.F, H, 4302, 4303 and 4305, all other applicable requirements of L.A.C. 33:V. Subpart 1, and of 40 C.F.R. Part 63, Subpart EEE and 40 C.F.R. Part 146, that are appropriate for the miscellaneous unit being permitted.[1]

The decisions as to what appropriate requirements would be included in the permit would be left to LDEQ. However, we believe that the permit conditions would be similar to those set forth in the enclosed Consent Agreement and Final Order, In Re: US Ecology Texas, Inc. and TD*X Associates, LP, EPA Docket Nos. RCRA-06-2012-0936 and RCRA-06-2012-0937, filed October 4, 2012. These permit conditions would include, but not be limited to: 1) a startup, shutdown, and malfunction plan; (2) a performance test, which includes meeting a 99.99% destruction removal efficiency for each principle organic hazardous constituent and meeting certain emission limits; (3) automatic waste feed cutoff system; (4) operating parameters; and (5) investigation, recordkeeping, testing, and reporting requirements. This position was also previously communicated to LDEQ in a letter from EPA to Mr. J. D. Head dated May 2, 2016, in which a copy was sent to LDEQ. A copy of this letter is also enclosed.

If you have any questions, please feel free to call me at (214) 665-8022.

Sincerely,

Susan Spalding
Associate Director
Hazardous Waste Branch (6MM-R)
Multimedia Division

Enclosure

[1] The equivalent Federal provisions are 40 C.F.R. Part 264, Subparts I through O, AA, BB, and CC, 40 C.F.R. Part 270, 40 C.F.R. Part 63, Subpart EEE, and 40 C.F.R. Part 146.
40 C.F.R. § 264.601.

EXHIBIT 2

A - Rineco Consent Decree August 16, 2010

B - Rineco Consent Decree Modification January 3, 2012

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
WESTERN DIVISION

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	
	)	Civil Action No. 4-07-CV
v.	)	01189SWW
	)	
	)	
RINECO CHEMICAL	)	
INDUSTRIES, INC.	)	
	)	
Defendant.	)	
	)	

CONSENT DECREE

TABLE OF CONTENTS

Plaintiff United States of America ("United States"), on behalf of the United States Environmental Protection Agency ("EPA"), filed a Complaint in this action on December 12, 2007, alleging that Defendant Rineco Chemical Industries, Inc. ("Defendant"), violated Sections 3005(a) and 3010 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §§ 6925(a) and 6930, and Arkansas Pollution Control and Ecology Commission ("APCEC") Regulation No. 23, which incorporates federal regulations approved by EPA pursuant to RCRA that are part of the federally-enforceable State hazardous waste program relating to the generation, transportation, treatment, storage, handling, and disposal of hazardous waste. On November 24, 2008, the Court issued an Order (doc.#85) which granted the United States' Motion for Leave to File an Amended and Supplemental Complaint, which in addition to the violations alleged in the Complaint, alleges that Rineco violated its RCRA Permit 28(H), Modules II(A), III(M), III(E), XV(A); and 40 C.F.R. §§ 264.31, 264.173, 264.1056, 264.1086(d)(3).

The Complaint alleges that Defendant has treated, stored, and disposed of hazardous waste in the Thermal Metal Wash unit ("TMW") at its facility located near Benton, Arkansas, without a RCRA permit, in violation of Section 3005(a) of RCRA, 42 U.S.C. § 6925(a),and APCEC Regulation No. 23 Part 264, Subpart X and Part 270, §§ 264.600, 270.1, 270.2, 270.10; that Defendant has failed

to file with the EPA or the State of Arkansas ("State") a notification and description of hazardous waste activity performed in the TMW unit at Defendant's facility in violation of Section 3010 of RCRA, 42 U.S.C. § 6930; and that Defendant has failed to establish financial assurance requirements for closure of the TMW and related storage units at Defendant's facility in violation of 40 C.F.R. §§ 264.140 - 264.151 and APCEC Regulation No. 23 §§ 264.140 - 264.151.

In addition to the allegations in the Complaint, the Amended and Supplemental Complaint alleges that Defendant has failed to design, maintain, construct, and operate the TMW and other units at Defendant's facility in such a manner as to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water, in violation of Defendant's RCRA Permit 28(H), Module II(A), 40 C.F.R. § 264.31, and APCEC Regulation No. 23 § 264.31; failed to equip numerous open-ended values and lines with caps or plugs in violation of Defendant's RCRA Permit 28(H), Module XV(A), 40 C.F.R. § 264.1056, and APCEC Regulation No. 23 § 264.1056/265.1056; and stored hazardous waste in an open container for more than fifteen (15) minutes in violation of Defendant's RCRA Permit 28(H), Module III(E), 40 C.F.R. § 264.173, RCRA Permit 28(H), Module III(M), 40 C.F.R. §

264.1086(d)(3), and APCEC Regulation No. 23 §§ 264.173, 264.1086(d)(3).

On March 4, 2009, the Court issued a Memorandum and Order (doc. #91) in which the Court granted the United States' Motion for Summary Judgment (doc. #40) as to liability on each of the five claims asserted in the Complaint and denied Defendant's Motion for Summary Judgment (doc. #13). The Court further ordered that the matter would proceed as to any appropriate civil penalties and as to the three remaining claims in the Amended and Supplemental Complaint. Nothing in this Consent Decree shall supercede the findings of fact or conclusions of law set forth in the Court's Order dated March 4, 2009.

Defendant denies any liability to the United States arising out of the transactions or occurrences alleged in the United States' Complaint and the United States' Amended and Supplemental Complaint. Defendant also denies the truth of any allegations in the Complaint or the Amended and Supplemental Complaint except the allegations pertaining to venue and subject matter and personal jurisdiction.

The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and will avoid litigation between the Parties and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, with the consent of the Parties, IT IS HEREBY ADJUDGED, ORDERED, AND DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action, pursuant to 28 U.S.C. §§ 1331, 1345, and 1355, and Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), and over the Parties. Venue lies in this District pursuant to 28 U.S.C. §§ 1391(b) and (c), and 1395(a)(1), because the violations complained of and the claims asserted herein arose in this district, and because Defendant conducts business at facilities located in this district. For purposes of this Decree, or any action to enforce this Decree, Defendant consents to the Court's jurisdiction over this Decree and any such action and over Defendant and consents to venue in this judicial district.

II. APPLICABILITY

2. The obligations of this Consent Decree apply to and are binding upon the United States, and upon the Defendant and any successors, assigns, or other entities or persons otherwise bound by law.

3. No transfer of ownership or operation of the Facility, whether in compliance with the procedures of this Paragraph or otherwise, shall relieve Defendant of its obligation to ensure that the terms of the Decree are implemented. At least thirty (30) Days prior to such transfer, Defendant shall provide a copy

of this Consent Decree to the proposed transferee and shall simultaneously provide written notice of the prospective transfer, together with a copy of the proposed written agreement, to EPA Region 6, the United States Attorney for the Eastern District of Arkansas, and the United States Department of Justice, in accordance with Section XIII of this Decree (Notices). Defendant may assert that such proposed written agreement to be provided under this Paragraph is protected as Confidential Business Information ("CBI") under 40 C.F.R. Part 2.

4. Defendant shall provide a copy of this Consent Decree to all officers, employees, and agents whose duties include responsibility for compliance with any provision of this Decree, as well as to any contractor entity retained to perform work required under this Consent Decree. Defendant shall condition any such contract upon performance of the work in conformity with the terms of this Consent Decree.

5. In any action to enforce this Consent Decree, Defendant shall not raise as a defense the failure by any of its officers, directors, employees, agents, or contractors to take any actions necessary to comply with the provisions of this Consent Decree, unless Defendant establishes that such failure resulted from a Force Majeure event as defined in Section VIII of this Consent Decree.

III. DEFINITIONS

6. Terms used in this Consent Decree that are defined in RCRA or in regulations promulgated pursuant to or authorized by RCRA shall have the meanings assigned to them in RCRA or such regulations, unless otherwise provided in this Decree. Regulations referred to by their federal citations also shall include reference to their State counterparts (e.g. 40 C.F.R. § 264.601 also includes reference to APCEC Regulation No. 23 § 264.601). Whenever the terms set forth below are used in this Consent Decree, the following definitions shall apply:

a. "ADEQ" shall mean the Arkansas Department of Environmental Quality and any of its successor departments or agencies;

b. "Amended Complaint" shall mean the Amended and Supplemental Complaint filed by the United States in this action;

c. "Complaint" shall mean the Complaint filed by the United States in this action;

d. "Consent Decree" or "Decree" shall mean this Decree;

e. "Day" shall mean a calendar day unless expressly stated to be a business day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or a federal holiday, the period shall run until the close of business of the next business day;

f. "Defendant" shall mean Rineco Chemical Industries, Inc., a corporation incorporated under the laws of the State of Arkansas and licensed to do business in the State of Arkansas;

g. "EPA" shall mean the United States Environmental Protection Agency and any of its successor departments or agencies;

h. "Effective Date" shall have the definition provided in Section XIV;

i. "Facility" shall mean Defendant's land, structures, other appurtenances, and improvements on the land, used for the treatment, storage, or disposal of hazardous waste located at 817 Vulcan Road in Benton, Arkansas;

j. "Paragraph" shall mean a portion of this Decree identified by an Arabic numeral;

k. "Parties" shall mean the United States and Defendant;

l. "Section" shall mean a portion of this Decree identified by a roman numeral;

m. "State" shall mean the State of Arkansas;

n. "TMW" shall mean the Thermal Metal Wash unit, including the thermal oxidation unit, at the Facility.

p. "United States" shall mean the United States of America, acting on behalf of EPA.

IV. CIVIL PENALTY

7. Within thirty (30) Days after the Effective Date of this Consent Decree, Defendant shall pay the sum of $1,350,000 as a civil penalty.

8. Defendant shall pay the civil penalty due by Fed Wire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice in accordance with written instructions to be provided to Defendant, following lodging of the Consent Decree, by the Financial Litigation Unit of the U.S. Attorney's Office for the Eastern District of Arkansas, USA Post Office Box 1229 Little Rock, AR 72203, 501-340-2600. At the time of payment, Defendant shall send a copy of the EFT authorization form and the EFT transaction record, together with a transmittal letter, which shall state that the payment is for the civil penalty owed pursuant to the Consent Decree in United States v. Rineco Chemical Industries, Inc., and shall reference the civil action number and DOJ case number 90-7-1-08902, to the United States in accordance with Section XIII of this Decree (Notices); by email to acctsreceivable.CINWD@epa.gov; and by mail to:

EPA Cincinnati Finance Office
26 Martin Luther King Drive
Cincinnati, Ohio 45268

9. Defendant shall not deduct any penalties paid under this Decree pursuant to this Section or Section VII (Stipulated Penalties) in calculating its federal income tax.

V. COMPLIANCE REQUIREMENTS

10. Application for permit for the TMW. Within sixty (60)Days after the Effective Date of this Consent Decree, Defendant shall submit to the Director of ADEQ an application for a RCRA permit for its TMW as a Subpart X-Miscellaneous Unit in accordance with 40 C.F.R. §§ 264.600-264.603, 40 C.F.R. §§ 270.10-270.14, 270.23, 270.30-270.33, the Risk Burn Guidance for Hazardous Waste Combustion Facilities, OSWER, EPA530-R-01-001, July 2001; and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, OSWER, EPA-R-05-006, September 2005. Within sixty (60)Days after the Effective Date of this Consent Decree, Defendant also shall submit to the Director of ADEQ an application for a RCRA permit for storage of hazardous waste related to the TMW. Defendant shall simultaneously provide the Associate Director of the Hazardous Waste Enforcement Branch, EPA Region 6, with a copy of such applications, in accordance with Section XIII (Notices). The TMW must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. The permit application must include such terms and conditions as necessary to protect human health and the environment, including, but not limited to, as appropriate, design and operating requirements for responses to releases of hazardous waste or hazardous constituents from the TMW. The

permit application must include those requirements of subparts I through O, X, and subparts AA through CC of part 264, part 270, part 63 subpart EEE, and part 146 of chapter 40 that are appropriate for the TMW.

11. Defendant must notify the public, hold a public meeting, and offer the public an opportunity to comment regarding Defendant's application for a permit for the TMW in accordance with 40 C.F.R. Part 124, as applicable, and 40 C.F.R. § 270.42(c).

12. Preparation and Submission of Trial Burn Plan. For the purpose of determining feasibility of compliance with the performance standards of 40 C.F.R. § 264.343, and determining adequate operating conditions under 40 C.F.R. §§ 264.345, as part of its RCRA permit application for the TMW, Defendant must prepare and submit to the Director of ADEQ a trial burn plan and perform a trial burn in accordance with 40 C.F.R. § 270.62(b).

13. The trial burn plan must include all of the information required by 40 C.F.R. § 270.62(b)(2).

14. After the Director of ADEQ has evaluated the sufficiency of the information provided, Defendant must provide any supplemental information required by the Director of ADEQ in accordance with 40 C.F.R. § 270.62(b)(3).

15. During the trial burn, Defendant must calculate the trial Principal Organic Hazardous Constituents ("POHCs")

specified by the Director of ADEQ based on the waste analysis data in the trial burn plan submitted by Defendant in accordance with 40 C.F.R. § 270.62(b)(4).

16. The trial burn performed by Defendant must comply with 40 C.F.R. § 270.62(b)(5).

17. Defendant shall not commence the trial burn until after the Director of ADEQ has issued a notice to all persons on the Facility mailing list as set forth in 40 C.F.R. § 124.10(c)(1)(ix) and to the appropriate units of State and local government as set forth in 40 C.F.R. §§ 124.10(c)(1)(x) announcing the scheduled commencement and completion date for the trial burn as required by 40 C.F.R. § 270.62(b)(6).

18. During the trial burn (or as soon after the burn as is practicable), Defendant shall make the determinations required by 40 C.F.R. § 270.62(b)(7). During the trial burn, Defendant must demonstrate compliance with the performance standards required by 40 C.F.R. § 264.343.

19. Preparation and Submission of Risk Burn Plan. To collect emissions data for evaluation in a site-specific risk assessment, as part of its RCRA permit application for the TMW, Defendant also must prepare and submit a risk burn plan and perform a risk burn in accordance with the Risk Burn Guidance for Hazardous Waste Combustion Facilities, OSWER, EPA530-R-01-001, July 2001; and the Human Health Risk Assessment Protocol for

Hazardous Waste Combustion Facilities, OSWER, EPA-R-05-006, September 2005. The risk burn should be integrated with the trial burn to produce a consistent set of proposed enforceable permit conditions.

20. The risk burn performed by Defendant shall collect fugitive and stack emissions data and define the operating requirements for the TMW based on control parameters identified in Chapters 4 through 7 of the Risk Burn Guidance for Hazardous Waste Combustion Facilities. During the risk burn, Defendant shall evaluate each of the constituents specified in Chapters 4 though 7 of the Risk Burn Guidance including the dioxins, furans, other organics, metals, particulate matter, hydrogen chloride, and chlorine identified therein.

21. During the risk burn (or as soon after the burn as is practicable), the Defendant shall make the determinations set forth in the Risk Burn Guidance for Hazardous Waste Combustion Facilities, and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities deemed appropriate by the Director of ADEQ. During the risk burn, Defendant must demonstrate that emissions from the TMW do not present a risk to human health or the environment.

22. Within ninety (90) days after completion of the trial and risk burns, or later if approved by the Director of ADEQ, Defendant must submit to the Director of ADEQ a certification

that the trial and risk burns have been carried out in accordance with the approved trial and risk burn plans, and must submit the results of all the determinations required in 40 C.F.R. § 270.62(b)(7).

23. All data collected during the trial and risk burns must be submitted to the Director of ADEQ following the completion of the trial and risk burns. A copy of the data collected during the trial and risk burns also must be submitted to the Associate Director of the Hazardous Waste Enforcement Branch, EPA Region 6, in accordance with Section XIII of this Consent Decree (Notices).

24. All submissions required by Section V must be certified on behalf of the Defendant by the signature of a person authorized to sign a permit application or a report under 40 C.F.R. § 270.11.

25. Defendant shall request that the final RCRA permit for the TMW include performance standards, operating requirements, monitoring and inspection requirements, and closure requirements in accordance with 40 C.F.R. §§ 264.343, 264.345, 264.347, and 264.351. Defendant also shall request that the final permit for the TMW shall include risk based terms and conditions necessary to protect human health and the environment in accordance with the Risk Burn Guidance for Hazardous Waste Combustion Facilities

and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.

26. Continued Operation. Upon Defendant's submission of the initial application for a RCRA permit for the TMW, including the trial and risk burn plans, Defendant may continue to operate the TMW during the one year following such submission if Defendant otherwise maintains compliance with the requirements of this Decree. Whenever the Director of ADEQ issues a final permit for the TMW, Defendant immediately must comply with that permit, even if the permit is issued in less than one year after Defendant submits its initial application. Without a final permit, Defendant may not operate the TMW at anytime later than one year after Defendant submits its initial application, except as that time is enlarged under Paragraphs 29, 45, 46, 47, or 76 of this Consent Decree. The requirements of this Paragraph shall not be stayed as a result of any challenge or appeal by Defendant of the final RCRA permit for the TMW, or any of its terms or conditions, issued by the Director of ADEQ.

27. EPA Review and Comment. Nothing in this Consent Decree shall limit the EPA's rights under applicable environmental laws or regulations, including but not limited to, Section 3005(c)(3) of RCRA, 42 U.S.C. § 6925, 40 CFR §§ 270.32 and 40 C.F.R. §§ 271.19, to review, comment, and incorporate applicable requirements of parts 264 and 266 through 268 of

chapter 40 directly into the permit or establish other permit conditions that are based on those parts; or to take action under Section 3008(a)(3) of RCRA, 42 U.S.C. § 6928, against Defendant on the ground that the RCRA permit for the TMW does not comply with a condition that the EPA Regional Administrator in commenting on the permit application or draft permit stated was necessary to implement approved State program requirements, whether or not that condition was included in the final permit. If Defendant disputes an action taken by EPA pursuant to 40 CFR §§ 270.32 or 40 C.F.R. §§ 271.19, the Defendant may ask the District Court to resolve such dispute in accordance with Section IX of this Consent Decree (Dispute Resolution). The District Court shall resolve such dispute in accordance with applicable law.

28. To comply with this Consent Decree, Defendant must obtain a RCRA permit for the TMW as a Subpart X-Miscellaneous Unit in accordance with 40 C.F.R. §§ 264.600-264.603, 40 C.F.R. §§ 270.10-270.14, 270.23, 270.30-270.33, the Risk Burn Guidance for Hazardous Waste Combustion Facilities, OSWER, EPA530-R-01-001, July 2001; and the Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, OSWER, EPA-R-05-006, September 2005.

29. TMW Permit. Defendant shall prepare and submit its application for a RCRA permit for the TMW as required in this

Section V. Defendant may seek relief under the provisions of Section VIII of this Consent Decree (Force Majeure) for any delay in the performance of any such obligations resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if Defendant has submitted a timely and complete application and has taken all other actions necessary to obtain such permit or approval.

30. Fugitive Emissions. Within thirty (30)Days after the Effective Date of this Consent Decree, during the period before Defendant obtains its RCRA permit for the TMW, consistent with 40 C.F.R. §§ 264.345(d) and 264.347(b), Defendant shall control fugitive emissions from the TMW by:

a. Keeping the treatment zone totally sealed against fugitive emissions; or

b. Maintaining a treatment zone pressure lower than atmospheric pressure; or

c. Establishing an alternative means of control demonstrated (with part B of the permit application) to provide fugitive emissions control equivalent to maintenance of treatment zone pressure lower than atmospheric pressure.

Defendant shall conduct a thorough visual inspection of the TMW treatment zone and associated equipment (pumps, values, conveyors, pipes, etc.), at least daily, for leaks, spills, fugitive emissions, and other signs of tampering. The results of

this inspection must be recorded, and such records must be placed in the operating record for the Facility required by 40 C.F.R. § 264.73.

As part of its application for a RCRA permit for the TMW, Defendant shall propose as permit conditions the above fugitive emissions requirements.

31. Within sixty (60) Days after the Effective Date of this Consent Decree, Defendant shall file with the State a notification and description of hazardous waste activity expressly related to the TMW performed at the Facility in accordance with Section 3010 of RCRA, 42 U.S.C. § 6930. A copy of the notification required by this Paragraph also must be submitted to the Associate Director of the Hazardous Waste Enforcement Branch, EPA Region 6, in accordance with Section XIII of this Consent Decree (Notices).

32. Within sixty (60) Days after the Effective Date of this Consent Decree, Defendant shall submit to the Director of ADEQ an application for and establish financial assurance for closure of the TMW and related storage units at the Facility in accordance with Section 3004(a) of RCRA, 42 U.S.C. § 6924(a), and 40 C.F.R. § 264, Subpart H. A copy of the application and documentation of the financial assurances required by this Paragraph also must be submitted to the Associate Director of the

Hazardous Waste Enforcement Branch, EPA Region 6, in accordance with Section XIII of this Consent Decree (Notices).

VI. REPORTING REQUIREMENTS

33. Defendant shall submit the following reports:

(a). Within 30 days after the end of each six month period following the Effective Date of this Consent Decree but before the final RCRA permit for the operation of the TMW is issued, and thirty (30) Days after the end of each calendar year thereafter until termination of this Decree pursuant to Section XVII, Defendant shall submit a report for the preceding six month period or calendar year, respectively, that summarizes the status of Defendant's application for a RCRA permit for the TMW and the status of compliance with the requirements of this Consent Decree.

b. The report also shall include a description of any non-compliance with the requirements of Section V of this Consent Decree and an explanation of the violation's likely cause and of the remedial steps taken, or to be taken, to prevent or minimize such violation. If the cause of a violation cannot be fully explained at the time the report is due, Defendant shall so state in the report. Defendant shall investigate the cause of the violation and shall then submit an amendment to the report, including a full explanation of the cause of the violation, within thirty (30) Days after Defendant becomes aware of the

cause of the violation. Nothing in this Paragraph or the following Paragraph relieves Defendant of its obligation to provide the notice required by Section VIII of this Consent Decree (Force Majeure).

c. Whenever any violation of this Consent Decree or any other event affecting Defendant's performance under this Decree may pose an immediate threat to the public health or welfare or the environment, Defendant shall notify the Section Chief, Hazardous Waste Enforcement Section, Compliance Assurance and Enforcement Division, EPA, Region 6, 1445 Ross Avenue, Dallas, Texas 75202 by telephone to (214) 665-8006, by electronic or facsimile transmission to (214) 665-7446 as soon as possible, but no later than twenty-four (24) hours after Defendant first knew of the violation or event. This procedure is in addition to the requirements set forth in the preceding Paragraph.

d. All reports shall be submitted to the persons designated in Section XIII of this Consent Decree (Notices).

e. Each report submitted by Defendant under this Section shall be signed by an official of the submitting party and include the following certification:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who

> manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

This certification requirement does not apply to emergency or similar notifications where compliance would be impractical.

f. The reporting requirements of this Consent Decree do not relieve Defendant of any reporting obligations required by RCRA or its implementing regulations, or by any other federal, state, or local law, regulation, permit, or other requirement.

g. Any information provided pursuant to this Consent Decree may be used by the United States in any proceeding to enforce the provisions of this Consent Decree and as otherwise permitted by law.

VII. STIPULATED PENALTIES

34. Defendant shall be liable for stipulated penalties to the United States for violations of this Consent Decree as specified below, unless excused under Section VIII (Force Majeure). A violation includes failing to perform any obligation required by the terms of this Decree, according to all applicable requirements of this Decree and within the specified time schedules established by or approved under this Decree.

35. Late Payment of Civil Penalty. If Defendant fails to pay the civil penalty required to be paid under Section IV of this Decree (Civil Penalty) when due, Defendant shall pay a stipulated penalty of $3,000 per Day for each Day that the payment is late.

36. Compliance Milestones. The following stipulated penalties shall accrue per violation per Day for each violation of the requirements identified in the following subparagraphs:

a. Failure to within sixty (60) Days after the Effective Date of this Consent Decree, submit an application to the Director of ADEQ for a RCRA permit for the TMW as required by Paragraph 10 of this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$3,000	15th through 30th Day
$10,000	31st Day and beyond

b. Failure to prepare and submit trial burn and risk burn plans and perform trial and risk burns as required by Paragraphs 12-24 of this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$3,000	15th through 30th Day
$10,000	31st Day and beyond

c. Operation of the TMW without a final permit after the time allowed in Paragraph 26 in this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$10,000	1st through 14th Day
$25,000	15th Day and beyond

d. Failure to, within sixty (60) Days after the Effective Date of this Consent Decree, file with the State a notification and description of hazardous waste activity expressly related to the TMW operated at the Facility in accordance with Section 3010 of RCRA, 42 U.S.C. § 6930:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$1,500	15th through 30th Day
$2,500	31st Day and beyond

e. Failure to, within sixty (60) Days after the Effective Date of this Consent Decree, establish financial assurance for or closure of the TMW and related storage units at the Facility in accordance with Section 3004(a) of RCRA, 42 U.S.C. § 6924(a), and 40 C.F.R. § 264, Subpart H.

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$3,000	15th through 30th Day
$10,000	31st Day and beyond

37. Reporting Requirements. The following stipulated penalties shall accrue per violation per Day for each violation of the reporting requirements of Section VI of this Consent Decree:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 14th Day
$1,500	15th through 30th Day
$2,500	31st Day and beyond

38. The stipulated penalties under this Section shall begin to accrue on the Day after performance is due or on the Day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation ceases. Stipulated penalties shall accrue simultaneously for separate violations of this Consent Decree.

39. Defendant shall pay any stipulated penalty within sixty (60) Days of receiving the United States' written demand, unless Defendant invokes the Dispute Resolution procedures under Section IX (Dispute resolution). A demand for the payment of the stipulated penalties will identify the particular violation(s) to which the stipulated penalty relates and the penalty amount that the United States is demanding for each violation (as best as can be estimated).

40. The United States may in the unreviewable exercise of its discretion, reduce or waive stipulated penalties otherwise due it under this Consent Decree.

41. Stipulated penalties shall continue to accrue as provided in Paragraph 38, during any Dispute Resolution, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to the Court, Defendant shall pay accrued penalties determined to be owing, together with interest, to the United States within thirty (30)Days of the effective date of the agreement or the receipt of EPA's decision or order.

b. If the dispute is appealed to the Court and the United States prevails in whole or in part, Defendant shall pay all accrued penalties determined by the Court to be owing, together with interest, within sixty (60) Days of receiving the Court's decision or order, except as provided in subparagraph c, below.

c. If any Party appeals the District Court's decision, Defendant shall pay all accrued penalties determined to be owing, together with interest, within sixty (60) Days of receiving the final appellate court decision.

42. Defendant shall pay stipulated penalties owing to the United States in the manner set forth and with the confirmation

notices required by Paragraph 8, except that the transmittal letter shall state that the payment is for stipulated penalties and shall state for which violation(s) the penalties are being paid.

43. If Defendant fails to pay stipulated penalties according to the terms of this Consent Decree, Defendant shall be liable for interest on such penalties, as provided for in 28 U.S.C. § 1961, accruing as of the date payment became due. Nothing in this Paragraph shall be construed to limit the United States from seeking any remedy otherwise provided by law for Defendant's failure to pay any stipulated penalties.

44. Subject to the provisions of Section XI of this Consent Decree (Effect of Settlement/Reservation of Rights), the stipulated penalties provided for in this Consent Decree shall be in addition to any other rights, remedies, or sanctions available to the United States for Defendant's violation of this Consent Decree or applicable law. Where a violation of this Consent Decree is also a violation of RCRA or its implementing regulations, Defendant shall be allowed a credit, for any stipulated penalties paid, against any statutory penalties imposed for such violation.

VIII. FORCE MAJEURE

45. "Force Majeure" for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of

Defendant, of any entity controlled by Defendant, or of Defendant's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Defendant's best efforts under the circumstances to fulfill the obligation. The requirement that Defendant exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential Force Majeure event and best efforts to address the effects of any such event (a) as it is occurring and (b) after it has occurred to prevent or minimize any resulting delay to the greatest extent possible. "Force Majeure" does not include Defendant's financial inability to perform any obligation under this Consent Decree.

46. Defendant shall provide notice to the Section Chief, Hazardous Waste Enforcement Section, Compliance Assurance and Enforcement Division, EPA, Region 6, 1445 Ross Avenue, Dallas, Texas 75202 by telephone to (214) 665-8006, by electronic or facsimile transmission to (214) 665-7446 within seventy-two (72) hours of when Defendant first knew of a claimed Force Majeure event. Within fourteen (14) Days thereafter, Defendant shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; and

Defendant's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of Defendant, such event may cause or contribute to an endangerment to public health, welfare or the environment. Defendant shall include with any notice documentation supporting the claim that the delay was attributable to a Force Majeure. Failure to comply with the above requirements shall preclude Defendant from asserting any claim of Force Majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Defendant shall be deemed to know of any circumstance of which Defendant, any entity controlled by Defendant, or Defendant's contractors had knowledge. For purposes of claiming a Force Majeure event related to Defendant's failure to receive a final RCRA permit for the TMW within one year after Defendant submits its initial application, Defendant must provide written notice and documentation to the Section Chief, Hazardous Waste Enforcement Section, Compliance Assurance and Enforcement Division, and the Chief of the Office of Regional Counsel, RCRA Enforcement Branch, EPA Region 6, not later than fourteen (14) Days after one year after Defendant submits its initial application that Defendant has not received a final RCRA permit for the TMW. Such written notice must provide an explanation and description of Defendant's submission of a timely and complete

application and other actions taken necessary to obtain such permit, but need not provide an explanation or description of the reasons for the delay or other matters referred to above in this Paragraph, if such reasons or other matters are beyond the knowledge of Defendant.

47. If EPA agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Decree that are affected by the Force Majeure event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the Force Majeure event shall not, of itself, extend the time for performance of any other obligation. EPA will notify Defendant in writing of the length of the extension, if any, for performance of the obligations affected by the Force Majeure event.

48. If EPA does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, EPA will notify Defendant in writing of its decision.

49. If Defendant elects to invoke the dispute resolution procedures set forth in Section IX (Dispute Resolution), it shall do so no later than thirty (30) Days after receipt of EPA's notice. In any such proceeding, Defendant shall have the burden of demonstrating by a preponderance of the evidence that the

delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that the Defendant complied with the requirements of Paragraphs 45 and 46, above. If the Defendant carries this burden, the delay at issue shall be deemed not to be a violation by the Defendant of the affected obligation of this Consent Decree identified to EPA and the Court.

IX. DISPUTE RESOLUTION

50. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree.

51. Informal Dispute Resolution. Any dispute subject to Dispute Resolution under this Consent Decree shall first be the subject of informal negotiations. The dispute shall be considered to have arisen when Defendant serves the United States with a written Notice of Dispute, in accordance with Section XIII of this Consent Decree (Notices). Such Notice of Dispute shall state clearly the matter in dispute. The period of informal negotiations shall not exceed forty-five (45) Days from the date the dispute arises, unless that period is modified by written agreement of the Parties. If the Parties cannot resolve a

dispute by informal negotiations, then the position advanced by the United States shall be considered binding unless, within forty-five (45) Days after the conclusion of the informal negotiation period, Defendant invokes formal dispute resolution procedures as set forth below.

52. Formal Dispute Resolution. Defendant shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States a written Statement of Position regarding the matter in dispute. The Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting Defendant's position and any supporting documentation relied upon by Defendant.

53. The United States shall serve its Statement of Position within forty-five (45) Days of receipt of Defendant's Statement of Position. The United States' Statement of Position shall include, but need not be limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the United States. If the United States does not accept Defendant's position, the United States' Statement of Position shall be binding on Defendant, unless Defendant files a motion for judicial review of the dispute in accordance with the following Paragraph.

54. Defendant may seek judicial review of the dispute by filing with the Court and serving on the United States a motion requesting judicial resolution of the dispute. The motion must be filed within forty-five (45) Days of receipt of the United States' Statement of Position pursuant to the preceding Paragraph. The motion shall contain a written statement of Defendant's position on the matter in dispute, including any supporting factual data, analysis, opinion, or documentation, and shall set forth the relief requested and any schedule within which the dispute must be resolved for orderly implementation of the Consent Decree.

55. The United States shall respond to Defendant's motion within the time period allowed by the Local Rules of this Court. Defendant may file a reply memorandum, to the extent permitted by the Local Rules.

56. The Court shall decide all disputes pursuant to applicable principles of law for resolving such disputes. In their initial filings with the Court under Paragraphs 55 and 56, the Parties shall state their respective positions as to the applicable standard of law for resolving the particular dispute. The Court shall not draw any inference nor establish any presumptions adverse to any Party as a result of invocation of this Section or the Parties' inability to reach agreement.

57. The invocation of dispute resolution procedures under this Section shall not, by itself, extend, postpone, or affect in any way any obligation of Defendant under this Consent Decree, unless and until final resolution of the dispute so provides. Stipulated penalties with respect to the disputed matter shall continue to accrue from the first Day of noncompliance, but payment shall be stayed pending resolution of the dispute as provided in Paragraph 41. If Defendant does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section VII (Stipulated Penalties).

X. INFORMATION COLLECTION AND RETENTION

58. The United States and its representatives, including attorneys, contractors, and consultants, shall have the right of entry into the Facility at all reasonable times, upon presentation of credentials, to:

a. monitor the progress of activities required under this Consent Decree;

b. verify any data or information submitted to the United States in accordance with the terms of this Consent Decree;

c. obtain samples and, upon request, splits and results of any samples taken by Defendant or its representatives, contractors, or consultants;

d. obtain documentary evidence, including photographs and similar data; and

e. assess Defendant's compliance with this Consent Decree.

59. Upon request, EPA shall provide Defendant splits and results of any samples taken by EPA.

60. Until two years after the termination of this Consent Decree, Defendant shall retain (in paper or electronic form), and shall instruct its contractors and agents to preserve, all non-identical copies of all documents, records, or other information (including documents, records, or other information in electronic form) in its or its contractors' or agents' possession or control, or that come into its or its contractors' or agents' possession or control, and that relate to Defendant's performance of its obligations under this Consent Decree. This information-retention requirement shall apply regardless of any contrary corporate or institutional policies or procedures. At any time during this information-retention period, upon request by the United States, Defendant shall make available to EPA copies of any documents, records, or other information required to be maintained under this Paragraph. Notwithstanding the provisions of this Paragraph, Defendant may request in writing permission from EPA to not preserve, to not maintain, or to destroy certain specified categories of documents. Defendant's obligations will

remain unchanged, however, unless and until EPA issues written approval of the request, which may or may not, in EPA's discretion, include a waiver of Defendant's obligations under this Paragraph.

61. At the conclusion of the information-retention period provided in the preceding Paragraph, Defendant shall notify the United States at least ninety (90) Days prior to the destruction of any documents, records, or other information subject to the requirements of the preceding Paragraph and, upon request by the United States, Defendant shall make any such documents, records, or other information available to EPA for inspection, copying or retention. Defendant may assert that certain documents, records, or other information is privileged under the attorney-client privilege or any other privilege recognized by federal law. If Defendant asserts such a privilege, in lieu of providing documents, it shall notify the United States that such a claim is being made, and upon request, shall provide the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of each author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Defendant. However, no documents, records, or other information created or generated pursuant to

the requirements of this Consent Decree shall be withheld on grounds of privilege.

62. Defendant may also assert that information required to be provided under this Section is protected as CBI under 40 C.F.R. Part 2. As to any information that Defendant seeks to protect as CBI, Defendant shall follow the procedures set forth in 40 C.F.R. Part 2.

63. This Consent Decree in no way limits or affects any right of entry and inspection, or any right to obtain information, held by the United States pursuant to applicable federal or State laws, regulations, or permits, nor does it limit or affect any duty or obligation of Defendant to maintain documents, records, or other information imposed by applicable federal or state laws, regulations, or permits.

XI. EFFECT OF SETTLEMENT/RESERVATION OF RIGHTS

64. This Consent Decree resolves the civil claims of the United States for the violations alleged in the Complaint and the Amended Complaint filed in this action through the Effective Date of this Consent Decree.

65. The United States reserves all legal and equitable remedies available to enforce the provisions of this Consent Decree, except as expressly stated in Paragraph 64. This Consent Decree shall not be construed to limit the rights of the United States to obtain penalties or injunctive relief under RCRA or its

implementing regulations, or under other federal or State laws, regulations, or permit conditions, except as expressly specified in Paragraph 64. The United States further reserves all legal and equitable remedies to address any imminent and substantial endangerment to the public health or welfare or the environment arising at, or posed by, Defendant's Facility under Section 7003 of RCRA, 42 U.S.C. §§ 6973.

66. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, civil penalties, other appropriate relief relating to the Facility, the Defendant shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case, except with respect to claims that have been specifically resolved pursuant to Paragraph 64 of this Section.

67. This Consent Decree is not a permit, or a modification of any permit, under any federal, State, or local laws or regulations. Defendant is responsible for achieving and maintaining compliance with all applicable federal, State, and local laws, regulations, and permits; and Defendant's compliance with this Consent Decree shall be no defense to any action

commenced pursuant to any such laws, regulations, or permits, except as set forth herein. The United States does not, by its consent to the entry of this Consent Decree, warrant or aver in any manner that Defendant's compliance with any aspect of this Consent Decree will result in compliance with RCRA, or with any other provisions of federal, State, or local laws, regulations, or permits.

68. This Consent Decree does not limit or affect the rights of Defendant or of the United States against any third parties, not party to this Consent Decree, nor does it limit the rights of third parties, not party to this Consent Decree, against Defendant, except as otherwise provided by law.

69. This Consent Decree shall not be construed to create rights in, or grant any cause of action to, any third party not party to this Consent Decree, or to release or waive any claim, cause of action, demand, or defense in law or equity that any party to this Consent Decree may have against any person(s) or entity not a party to this Consent Decree.

XII. COSTS

70. The Parties shall bear their own costs of this action, including attorneys' fees, except that the United States shall be entitled to collect the costs (including attorneys' fees) incurred in any action necessary to collect any portion of the

civil penalty or any stipulated penalties due but not paid by Defendant.

XIII. NOTICES

71. Unless otherwise specified herein, whenever notifications, submissions, or communications are required by this Consent Decree, they shall be made in writing and addressed as follows:

To the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Box 7611 Ben Franklin Station
Washington, D.C. 20044-7611
Re: DOJ No. 90-7-1-08902

and

To EPA:

Associate Director
Compliance Assurance and Enforcement Division (RCRA Enforcement Division)
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202

Multimedia Planning and Permitting Division (RCRA Permits Division)
U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75221

To Defendant:

Rineco Chemical Industries, Inc.
P.O. Box 729
Benton, Arkansas 72018

72. Any Party may, by written notice to the other Parties, change its designated notice recipient or notice address provided above.

73. Notices submitted pursuant to this Section shall be deemed submitted upon mailing, unless otherwise provided in this Consent Decree or by mutual agreement of the Parties in writing.

XIV. EFFECTIVE DATE

74. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court or a motion to enter the Consent Decree is granted, whichever occurs first, as recorded on the Court's docket.

XV. RETENTION OF JURISDICTION

75. The Court shall retain jurisdiction over this case until termination of this Consent Decree, for the purpose of resolving disputes arising under this Decree or entering orders modifying this Decree, pursuant to Sections IX and XVI, or effectuating or enforcing compliance with the terms of this Decree.

XVI. MODIFICATION

76. The terms of this Consent Decree may be modified only by a subsequent written agreement signed by all the Parties. Where the modification constitutes a material change to this Decree, it shall be effective only upon approval by the Court.

77. Any disputes concerning modification of this Decree shall be resolved pursuant to Section IX of this Decree (Dispute Resolution)provided, however, that, instead of the burden of proof provided by Paragraph 56, the Party seeking the modification bears the burden of demonstrating that it is entitled to the requested modification in accordance with Federal Rule of Civil Procedure 60(b).

XVII. TERMINATION

78. After Defendant has complied with the requirements of Section V of this Consent Decree (Compliance Requirements), has thereafter maintained satisfactory compliance with this Consent Decree and the RCRA permit for the TMW issued by the Director of ADEQ for a period of one year, and has paid the civil penalty and any accrued stipulated penalties as required by this Consent Decree, Defendant may serve upon the United States a Request for Termination, stating that Defendant has satisfied those requirements, together with all necessary supporting documentation.

79. Following receipt by the United States of Defendant's Request for Termination, the Parties shall confer informally concerning the Request and any disagreement that the Parties may have as to whether Defendant has satisfactorily complied with the requirements for termination of this Consent Decree. If the United States agrees that the Decree may be terminated, the

Parties shall submit, for the Court's approval, a joint stipulation terminating the Decree.

80. If the United States does not agree that the Decree may be terminated, Defendant may invoke Dispute Resolution under Section IX of this Decree. However, Defendant shall not seek Dispute Resolution of any dispute regarding termination, under Paragraph 52 of Section IX, until thirty (30) Days after service of its Request for Termination.

XVIII. PUBLIC PARTICIPATION

81. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) Days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations indicating that the Consent Decree is inappropriate, improper, or inadequate. Defendant consents to entry of this Consent Decree without further notice and agrees not to withdraw from or oppose entry of this Consent Decree by the Court or to challenge any provision of the Decree, unless the United States has notified Defendant in writing that it no longer supports entry of the Decree.

XIX. SIGNATORIES/SERVICE

82. Each undersigned representative of Defendant and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind the Party he or she represents to this document.

83. This Consent Decree may be signed in counterparts, and its validity shall not be challenged on that basis. Defendant agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rules 4 and 5 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XX. INTEGRATION

84. This Consent Decree constitutes the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supercedes all prior agreements and understandings, whether oral or written, concerning the settlement embodied herein. No other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it

represents, nor shall it be used in construing the terms of this Decree.

XXI. FINAL JUDGMENT

85. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment of the Court as to the United States and the Defendant. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

Dated and entered this 16th day of August, 2010.

UNITED STATES DISTRICT COURT JUDGE

FOR THE UNITED STATES:

Dated: 4/27/10

IGNACIA S. MORENO
Assistant Attorney General
Environment and Natural Resources Division
United States Department of Justice

Dated: 5/13/10

RICHARD GLADSTEN
Senior Counsel
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
(202) 514-1711

United States v. Rineco Chemical Industries, Inc.
Civil Action No. 4-07-CV 01189SWW
Consent Decree

FOR THE ENVIRONMENTAL PROTECTION AGENCY:

Date: 5/19/10

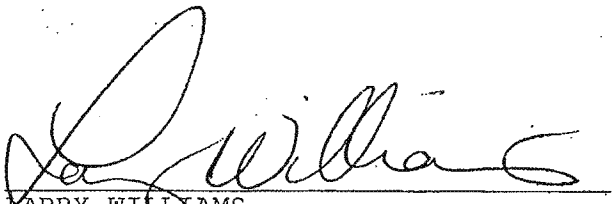
for AL ARMENDARIZ
Regional Administrator
U.S. Environmental Protection
Agency, Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Date: 5/17/10

TERRY SYKES
RCRA Enforcement Branch
U.S. Environmental Protection
Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

FOR DEFENDANT RINECO CHEMICAL INDUSTRIES, INC.

Date: 12/7/2009



LARRY WILLIAMS
Rineco Chemical Industries, Inc.
819 Vulcan Road
Benton, Arkansas 72015

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
WESTERN DIVISION

UNITED STATES OF AMERICA,

Plaintiff,

RINECO CHEMICAL INDUSTRIES, INC.

Defendant.

Civil Action No. 4-07-CV 01189SWW

ORDER ENTERING MODIFICATION OF CONSENT DECREE

Upon consideration of the United States' Unopposed Motion [doc.#105] for Entry of the Modification of the Consent Decree between the United States and the Rineco Chemical Industries, Inc. in the above-captioned case, there being no opposition thereto, and for good cause shown, the United States' Motion be and hereby is GRANTED and the Modification of the Consent Decree is entered. The Court has signed the Modification of the Consent Decree reflecting its approval of the proposed Modification of the Consent Decree.

SO ORDERED THIS 3rd DAY OF JANUARY 2012.

UNITED STATES DISTRICT JUDGE

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF ARKANSAS
WESTERN DIVISION

UNITED STATES OF AMERICA, Plaintiff, v. RINECO CHEMICAL INDUSTRIES, INC. Defendant.	)	Civil Action No. 4-07-CV 01189SWW

MODIFICATION OF CONSENT DECREE

On August 16, 2010, this Court entered Consent Decree (Doc. 102) between the United States and the Rineco Chemical Industries, Inc. ("Rineco") in the above-captioned case. In accordance with Paragraph 76 of the Consent Decree, the parties may modify the terms of the Consent Decree by written agreement of the parties. Where the modification constitutes a material change to the Decree, the modification shall be effective only upon approval by the Court.

Based on the agreement of the parties, and for good cause shown, the following Modification to the Consent Decree is approved:

Part 1. Interim Operating Conditions

The following interim operating restrictions and monitoring requirements (Interim Operating Conditions), which are in addition to any other requirements or restrictions in the Consent Decree, shall apply to Rineco's operations authorized under the Consent Decree between October 15, 2011, through the date that: (1) Rineco's authorization under the Consent Decree is terminated or ceases, as provided for under the Consent Decree or herein, or (2) a final RCRA Permit is issued (in which case the permit will provide operating conditions), whichever is earlier.

1. No later than October 31, 2011, Rineco shall submit to ADEQ and EPA proposed interim limits (with supporting data and calculations) on the TMW waste stream for the following parameters: waste feed limit, ash content, total chlorine and all risk assessment metals: antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, silver and thallium. Upon EPA's approval of such limits, and continuing through the date that Rineco conducts the Trial Burn referenced in Milestone 2, below, Rineco shall conduct daily representative sampling of its waste stream to demonstrate compliance with these interim TMW waste stream limits.

2. No later than January 1, 2012, Rineco shall install CO, HC, and Oxygen CEMS in each TOU unit, and no later than January

9, 2012, Rineco shall complete the calibration of each of the CEMS. Upon completion of the CEMS installation and calibration, Rineco shall use the CEMS to continuously measure CO, HC and Oxygen at each TOU stack. Rineco shall use the CEMS measurements to demonstrate compliance with the following emissions limits for each TOU: 100 ppm CO (by volume) and 10 ppm HC (by volume reported as propane), over an hourly rolling average, dry basis, corrected to 7 percent oxygen.

3. Beginning November 1, 2011, and continuing through the date Rineco submits the Notice of Compliance referenced in Milestone 3, below (the "Notice of Compliance"), Rineco shall conduct monthly sampling and analysis of dioxin/furans on all of the following "exit/discharge" points: (i) Venturi scrubbers V1 through V6 effluent stream, (ii) contents of Tank T-401, (iii) recovery metals sent to recycler, (iv) sludge from the wet gas separator, and (v) char or ash from the TMW.

4. Beginning February 1, 2012, and continuing through the date Rineco submits the Notice of Compliance, Rineco shall conduct monthly stack sampling for dioxins/furans at each TOU stack using Method 0023A to demonstrate compliance with the following emissions limit: 0.40 ng TEQ/dscm standard corrected to 7 percent oxygen.

5. Beginning February 1, 2012, and continuing through the date Rineco submits the Notice of Compliance, Rineco shall

conduct monthly sampling for particulate matter (PM) as follows: Measurement for PM at each TOU stack will be conducted using Method 5/202 to demonstrate compliance with the following emissions limit: 0.013 gr/dscf standard corrected to 7 percent oxygen.

6. Beginning on the dates specified in the attached Table F-4 (and any subsequent approved revisions of these dates), and continuing through the date Rineco completes the Trial Burn, Rineco shall comply with the Operating Parameter Limits ("OPL") and Automatic Waste Feed Cutoff ("AWFCO") limits specified in the attached Table F-4 (and any subsequent approved revisions of these requirements). Rineco shall specify total waste feed rate, metal and total chlorine feed limits in a table in its NOD response referenced in Milestone 1, below.

7. Beginning January 9, 2012 and continuing thereafter, Rineco must institute Automatic Waste Feed Cut Offs to immediately cease waste feed in the event the CO, or HC emissions limits referenced in Paragraph 2 above are not met.

8. Beginning January 9, 2012 and continuing thereafter, Rineco shall measure stack gas flow rate on a continuous basis.

9. Once the Trial Burn is conducted, Rineco will comply with the OPLs and AWFCO limits established during the Trial Burn until Rineco submits the Notice of Compliance.

10. Once Rineco submits the Notice of Compliance, through the time that a final RCRA Permit is issued, Rineco shall comply with the OPLs, AWFCO requirements and emission limits proposed in the Notice of Compliance.

11. No later than October 31, 2011, Rineco shall permanently shut down any TOU unit for which it will not perform a Trial Burn within the timeline specified in Milestone 2, below.

12. Rineco shall maintain all electronic operating records, hard copies of field logs, and sampling and analytical results for the operations during the period between October 15, 2011 and the issuance of a final RCRA Permit.

13. Rineco shall submit to both ADEQ and EPA, all monitoring, sampling and analytical results specified in Paragraphs 1, 3, 4, or 5, above, within 45 days of the monitoring or sampling.

14. Rineco shall submit to both EPA and ADEQ, all monitoring and AWFCO exceedences of the requirements of Paragraphs 2, 6, or 7, above, no later than the tenth (10th) day of each month for the preceding month.

15. All analyses required herein shall be performed by a laboratory pre-approved by ADEQ to perform such analyses.

Part 2. Interim Authorization and Milestones

Rineco's authorization under the Consent Decree after October 14, 2011, is expressly conditioned on Rineco completing each of the following milestone deadlines to the satisfaction of ADEQ and EPA.

Milestone 1. Submission, Revision and Approval of Required Plan

Rineco has submitted the following plans, dated September 29, 2011, to ADEQ and EPA:

1. Revised Trial Burn Plan
2. Waste Analysis Plan incorporating requirements specified in 40 CFR § 270.62(b)
3. Quality Assurance Project Plan
4. CEMS (or CMS) Performance Evaluation Plan
5. Start-up, Shut-down and Malfunction Plan

ADEQ/EPA will review these plans and issue only one Notice of Deficiency (NOD) to Rineco. Rineco must provide an approvable response to ADEQ and EPA within 30 days of receipt of the NOD. In the event that Rineco fails to submit a timely and good-faith approvable NOD response, Rineco's authorization to operate the TMW shall terminate on the NOD response deadline (30 days from the date of receipt of the NOD).

Milestone 2. Trial Burn

By no later than January 27, 2012, Rineco must complete the

Trial Burn and collect all necessary data for the purpose of risk assessment.

Rineco must stop feeding hazardous waste to the TMW as soon it knows during or anytime after the trial burn that it has exceeded the MACT EEE emissions limits or operating parameter limits (OPLs), or any emission limits or OPLs specified in the Interim Operating Conditions, above.

In the event that Rineco fails to complete the Trial Burn or to collect the data as described above by January 27, 2012, Rineco's authorization to operate the TMW shall terminate on January 27, 2012.

Milestone 3. Notice of Compliance (NOC)

By no later than April 27, 2012, Rineco must deliver to ADEQ and EPA a Notice of Compliance and the test results including the field data, the analytical data and any other data or calculations supporting the emissions calculation and the OPLs proposed in the Notice of Compliance.

In the event that Rineco fails to deliver a complete and approvable Notice of Compliance and testing results as described above, Rineco's authorization to operate the TMW shall terminate on April 27, 2012.

Milestone 4. Risk Assessment report

By no later than April 27, 2012, Rineco must deliver to ADEQ and EPA a complete and approvable Risk Assessment report

consistent with the Human Health Risk Assessment Protocol for Hazardous Waste Combustion facilities, OSWER, EPA-R-05-006, (September 2005) and Paragraph 28 of the Consent Decree.

In the event that Rineco fails to deliver a timely Risk Assessment report as described above, Rineco's authorization to operate the TMW shall terminate on April 27, 2012.

Milestone 5. Approval of NOC and Issuance of Final RCRA Permit

ADEQ and EPA will review the NOC and issue only one Notice of Deficiency (NOD) to Rineco. Rineco must provide an approvable response to ADEQ and EPA within 30 days of receipt of the NOD. In the event that Rineco fails to submit a timely and a good-faith approvable NOD response, Rineco's authorization to operate the TMW shall terminate on the deadline for such performance (30 days from the date of the NOD).

By no later than October 14, 2012, Rineco must complete all remaining permitting requirements and have a final RCRA permit authorizing it to operate the TMW. In the event that ADEQ does not issue a final RCRA permit to Rineco as described above by October 14, 2012, any remaining authorization under this Consent Decree to operate the TMW shall cease and Rineco shall stop operating the TMW, except as that time is enlarged under Paragraphs 29, 45, 46, 47, or 76 of the Consent Decree.

Part 3. Stipulated Penalties

In addition to any other remedy provided herein or in the Consent Decree, Rineco shall be liable for, and shall pay, stipulated penalties to the United States for the violation of the compliance milestones contained herein. Such stipulated penalties shall be subject to the procedures and requirements provided in Part VII of the Consent Decree.

The following stipulated penalties shall accrue per violation per day for each violation described below:

1. Operation of the TMW after failing to meet any of the Milestones (Milestones 1-5) provided herein:

Penalty Per Violation Per Day	Period of Noncompliance
$10,000	1st through 14th day
$25,000	15th day and beyond

Approved and entered this 3rd day of January, 2012.

UNITED STATES DISTRICT COURT JUDGE

FOR THE UNITED STATES:

Dated: 12/14/11

RICHARD GLADSTEN
Senior Counsel
Environmental Enforcement Section
Environment and Natural Resources Division
United States Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
(202) 514-1711

FOR THE ENVIRONMENTAL PROTECTION AGENCY:

Date: 12·2·11

JOHN BLEVINS,
Director
Compliance Assurance and
Enforcement Division
U.S. Environmental Protection
Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

FOR DEFENDANT RINECO CHEMICAL INDUSTRIES, INC.

Date: November 16, 2011

LARRY WILLIAMS
Rineco Chemical Industries, Inc.
819 Vulcan Road
Benton, Arkansas 72015

Appendix D-VII

Table F-4
TMW Trial Burn Operating Regimen

Item	Unit	Parameter	AWFCO limit	Target Value	Completion Schedule
1	Fugitives Control Vent (24" Duct)	Pressure (in. w.c.)	0	- 0.5	10-24-2011
2	Feed Hopper / Conveyor Fugitive	Fugitive VOC Emissions (ppm)	0	0	11-11-2011
3	Cooling Screws #1, #2; Conveyor #1, #2; Shaker & Magnetic Separator	Fugitive VOC Emissions (ppm)	0	0	11-11-2011
4	Electric Heater (Electroscrew)	Exhaust Gas Max. Temperature (deg F) @ Active Venturi (V-3 or V-4)	1,500	1,100	10-15-2011
5	"	Exhaust Gas Min. Temperature (deg F) @ Active Venturi (V-3 or V-4)	400	400	10-15-2011
6	Venturi 1 thru 5 (V1 thru V5)	Min. Pressure Drop (Gas side) (in. w.c.)[1]	-12	0	10-24-2011
7	"	Min. Inlet Pressure (psi)	0	2	10-24-2011
8	"	Min. Blowdown Rate (total valve actuations/day)[2]	4	4	10-24-2011
9	"	Min. Liquid Level (in.)	-2	0	11-11-2011
10	Venturi 6 (V6)	Min. Pressure Drop (Gas side) (in. w.c.)[3]	-12	6	11-11-2011
11	"	Min. Inlet Pressure (psi)	0	2	11-11-2011
12	"	Min. Blowdown Rate (total valve actuations/day)[2]	0	0	10-24-2011
13	"	Min. Liquid Level (in.)	-2	0	11-11-2011
14	"	Max. Exhaust Gas Temperature (deg F)	130	130	10-15-2011
15	Wet Dust Collector	Min. Pressure Drop (in. w.c.)	0.5	0.5	11-11-2011
16	TOU-102	Min. Combustion Temperature (deg F)	1,500	1,500	10-15-2011
17	"	Max. CO Exhaust Gas (ppm)	100	100	01-09-2012
18	"	Max. HC Exhaust Gas (ppm)	10	10	01-09-2012
19	"	Maximum Stack Gas Velocity (fps)	39	33	01-09-2012
20	TOU-103	Min. Combustion Temperature (deg F)	1,500	1,500	10-15-2011
21	"	Max. CO Exhaust Gas (ppm)	100	100	01-09-2012
22	"	Max. HC Exhaust Gas (ppm)	10	10	01-09-2012
23	"	Maximum Stack Gas Velocity (fps)	39	33	01-09-2012

NOTES:
[1] Pressure drop (ΔP) is measured as pressure measured at cooling screws #1 or #2 [i.e., P SCREW_N or P SCREW_S, a or b) minus pressure measured at the inlet of V6 (i.e., P 12N_LINE).
[2] Valve actuations measured at valves XV Vx-PURGE (x = 1, 2, 3, 4, 5 and 6) (Re: Figure 029C).
[3] Pressure drop (ΔP) is measured as pressure at the inlet of V6 (i.e., P 12N_LINE) minus pressure at the inlet to the blowers [i.e., P 3IN_LINE).

EXHIBIT 3

CWM Lake Charles Comprehensive Performance Test Plan for Thermal Desorption Unit, November 2017 [with annotations by C. Palmer 7/15/2018]

Annotations by C. Palmer 7/15/2018

WASTE MANAGEMENT

CHEMICAL WASTE MANAGEMENT, INC.

LAKE CHARLES FACILITY

HAZARDOUS WASTE OPERATING PERMIT EPA ID NO. LAD 000 777 201 AGENCY INTEREST NO. 742

COMPREHENSIVE PERFORMANCE TEST PLAN FOR THERMAL DESORPTION UNIT

NOVEMBER 2017

PREPARED BY:

pivotal engineering

Coterie ENVIRONMENTAL

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1.0 INTRODUCTION

This comprehensive performance test (CPT) plan is being submitted by Chemical Waste Management, Inc., (CWM) for the Thermal Desorption Unit (TDU) to be operated at the Lake Charles Facility. The TDU is subject to the Resource Conservation and Recovery Act (RCRA) standards codified in Title 40 Code of Federal Regulations (CFR) Part 264 Subpart X and Louisiana Administrative Code (LAC) Title 33 Part V Chapter 32. The applicable operating requirements for the TDU are specified in Section V.G of Hazardous Waste Operating Permit No. LAD000777201-0P-RN-MO-I.

This plan describes the initial CPT to be performed for the TDU. The plan is designed to demonstrate compliance with the performance standards established under 40 CFR Part 264 Subpart X and LAC 33:V.Chapter 32, as specified in Condition V.G.10.a of the permit. It is being submitted in accordance with Condition V.G.10.b.i.4 of the permit.

1.1 FACILITY OVERVIEW

The CWM Lake Charles Facility is a commercial hazardous waste treatment, storage, and disposal facility located on a 390-acre tract near Carlyss, Louisiana. John Brannon Road divides the facility into two parts: 270 acres to the west and 120 acres to the east. Incoming waste is currently treated as required and then disposed in Hazardous Waste Landfill Cell 8, located on the west side of John Brannon Road, adjacent to the other operational areas of the facility. CWM has added two new technologies to the current operations at the Lake Charles Facility. These new technologies offer CWM opportunities to treat waste and recover oil for resale. The two new systems consist of Oil Recovery Units and the TDU.

The street address of the CWM Lake Charles Facility is:

Chemical Waste Management, Inc.
Lake Charles Facility
7170 John Brannon Road
Carlyss, Calcasieu Parish, Louisiana 70665

All correspondence should be directed to the following facility contact:

Benjamin Dabadie
Environmental Manager
Chemical Waste Management, Inc.
Lake Charles Facility
7170 John Brannon Road
Sulphur, Louisiana 70665

Phone: 337-583-3676
Email: bdabadie@wm.com

1.2 Unit Overview

The TDU is designed to remediate organic hydrocarbon waste streams by thermally volatilizing their hydrocarbon constituents such that they are separated from the solid fraction, processed, and captured as a recovered organic material. The TDU consists of a solids feed system, an indirectly heated rotary drum, a Vapor Recovery Unit (VRU), and a Thermal Oxidizer Unit (TOU). Gases exit the TOU and flow through a water quench, a venturi scrubber, and a packed bed scrubber. An induced draft (ID) fan downstream of the packed bed scrubber pulls the gases through the TOU and quench/scrubber system and pushes them out the stack.

1.3 Regulatory Overview

The TDU is a thermal treatment unit, but it does not meet the definitions of an incinerator, boiler, or industrial furnace provided in 40 CFR § 260.10. The TDU does not use controlled flame combustion. Therefore, this unit is subject to 40 CFR Part 264 Subpart X and LAC 33:V.Chapter 32. 40 CFR § 264.601 and LAC 33:V.3203 require that Subpart X permit terms and provisions include those requirements of 40 CFR Part 264 Subparts I through O and Subparts AA through CC, 40 CFR Part 270, 40 CFR Part 63 Subpart EEE, and 40 CFR Part 146 that are appropriate for the miscellaneous unit being permitted. The Louisiana Department of Environmental Quality (LDEQ) has determined that some of the performance standards of 40 CFR Part 63 Subpart EEE, Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP), are appropriate for the TDU.

The applicable performance standards for the TDU are stated in Condition V.G.10.a of the permit. The applicable emission standards for the TDU are summarized in Table 1-1 and are described below:

- Dioxins and furans (D/F) emissions shall not exceed 0.20 nanograms toxic equivalence per dry standard cubic meter (ng TEQ/dscm) corrected to seven percent oxygen.
- Mercury emissions shall not exceed 8.1 micrograms per dry standard cubic meter (µg/dscm) corrected to seven percent oxygen.
- Cadmium and lead combined, referred to as semivolatile metals (SVM), emissions shall not exceed 10 µg/dscm corrected to seven percent oxygen.
- Arsenic, beryllium, and chromium combined, referred to as low volatile metals (LVM), emissions shall not exceed 23 µg/dscm corrected to seven percent oxygen.
- Hydrogen chloride and chlorine combined (HCl/Cl_2) emissions shall not exceed 21 parts per million by volume on a dry basis (ppmv dry), expressed as a chloride equivalent and corrected to seven percent oxygen.
- Particulate matter (PM) emissions shall not exceed 0.08 grains per dry standard cubic foot (gr/dscf) corrected to seven percent oxygen.
- Carbon monoxide (CO) emissions shall not exceed 100 ppmv dry corrected to seven percent oxygen.

technically, since CWM has elected to not comply with the PM standard, SVM should be (Cd+Pb+Se) and LVM should be (Sb+As+Be+Cr+Co+Mn+Ni). Ref 1219(e)(3) Alt PM Standard

In addition to the emission standards, Condition V.G.10.b.i.2 of the permit requires that CWM demonstrate compliance with the destruction and removal efficiency (DRE) standard of 40 CFR § 63.1219(c)(1), which requires a DRE of 99.99 percent or greater for each designated principal organic hazardous constituent (POHC).

TABLE 1-1
APPLICABLE EMISSION STANDARDS FOR THERMAL DESORBER UNIT

PARAMETER	UNITS [1]	EMISSION STANDARD
Dioxins and furans	ng TEQ/dscm	0.20
Mercury	µg/dscm	8.1
Semivolatile metals	µg/dscm	10
Low volatile metals	µg/dscm	23
Hydrogen chloride and chlorine	ppmv dry	21
Particulate matter	gr/dscf	0.08
Carbon monoxide	ppmv dry	100
Destruction and removal efficiency	%	99.99

[1] Emission standards corrected to seven percent oxygen.

1.4 COMPREHENSIVE PERFORMANCE TEST OVERVIEW

The CPT is designed to demonstrate compliance with the emission standards being included as applicable requirements in the permit. The CPT will also establish the operating parameter limits (OPLs) required by Condition V.G.11 of the permit. One test condition will be performed for the TDU during the CPT. The CPT condition will be performed to demonstrate compliance with the DRE standard and the D/F, mercury, SVM, LVM, HCl/Cl_2, PM, and CO emission standards while operating the TDU at the maximum total hazardous waste feed rate, the minimum TOU temperature, and the maximum flue gas flow rate. The venturi scrubber will be operated at the minimum pressure drop, and the packed bed scrubber will be operated at the minimum liquid to gas ratio, the minimum liquid flow rate, and the minimum liquid pH.

This CPT is being coordinated by Coterie Environmental LLC (Coterie) under the direction of CWM personnel. Coterie is responsible for the test protocol development and implementation and will oversee the TDU's operations and the stack sampling activities during the test program. A stack sampling contractor will perform all of the stack sampling for the test program. This contractor will be responsible for all emissions samples collected during the test program, with oversight by Coterie. A spiking contractor will provide waste spiking services during the test program. The emissions samples will be sent to qualified laboratories for analysis. Additional information on the project team roles and responsibilities is provided in the quality assurance project plan (QAPP) in Appendix A.

Prior to the CPT, CWM will perform the continuous monitoring systems (CMS) performance evaluation test (PET). The goal of the CMS PET is to demonstrate that the CMS associated with the TDU are operating in compliance with the permit. During the CMS PET, CWM will verify that each CMS is correctly installed, calibrated, and operational. A copy of the CMS PET plan is included as Appendix B.

CWM anticipates conducting the CPT soon after initial introduction of hazardous waste to the TDU. The CPT will be conducted within the first 720 hours of hazardous waste operations. An additional 720 hours of operation may be requested if circumstances prevent CWM from performing the CPT within the allotted time. The CPT is expected to take three days. The CPT report will be submitted within 90 days after completion of all emissions testing, or an extension will be requested.

1.5 Operating Parameter Limits Overview

CWM intends to establish the applicable OPLs required by Condition V.G.11 of the permit during the CPT. The target OPLs are summarized in Table 1-2 and are discussed in detail in Section 2. The OPLs will be established as hourly rolling averages (HRAs) or instantaneous values.

Table 1-2
Target Operating Parameter Limits Summary

Operating Parameter	Permit Condition	Averaging Period	Target Limit
Maximum hazardous waste feed rate	V.G.11.a.i	HRA	10 tph
Maximum treatment drum pressure	V.G.11.a.ii	Instantaneous [1]	0 in. w.c.
Minimum thermal oxidizer unit temperature	V.G.11.a.iii	HRA	1,400°F
Maximum flue gas flow rate	V.G.11.a.vi	HRA	4,000 acfm
Minimum venturi scrubber pressure drop	V.G.11.a.vii	HRA	35 in. w.c.
Minimum packed bed scrubber liquid to gas ratio	V.G.11.a.viii	HRA	10 gal/Macf
Minimum packed bed scrubber liquid flow rate	V.G.11.a.ix	HRA	40 gpm
Minimum packed bed scrubber liquid pH	V.G.11.a.x	HRA	5.0
Minimum rotary drum temperature	V.G.11.b.1	None [2]	500°F
Maximum mercury feed rate	V.G.11.b.2	None [2]	5.0 lb/hr
Maximum chlorine feed rate	V.G.11.b.3	None [2]	80 lb/hr
Maximum semivolatile metals feed rate	V.G.11.b.4	None [2]	200 lb/hr
Maximum low volatile metals feed rate	V.G.11.b.5	None [2]	300 lb/hr

[1] The automatic cutoff for this instantaneous limit will be established with a 15-second delay.

[2] These parameters do not require any averaging period and are not part of the automatic waste feed cutoff system.

1.6 Reference Documents

Reference documents that have been used in developing this plan include the following:

- LDEQ, Final Modified Hazardous Waste Operating and Post-Closure Permit, Permittee: Chemical Waste Management, Inc., Lake Charles Facility, EPA ID Number: LAD000777201, Permit Number: LAD000777201-OP-RN-MO-1
- United States Environmental Protection Agency (USEPA), *Final Technical Support Document for HWC MACT Standards, Volume IV: Compliance With the HWC MACT Standards,* July 1999;
- USEPA, *Guidance on Setting Permit Conditions and Reporting Trial Burn Results*, January 1989;
- USEPA, *Methods Manual for Compliance With the BIF Regulations*, Appendix IX, 40 CFR Part 266;
- USEPA, National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors, 40 CFR Part 63, Subpart EEE, September 30, 1999, and as amended through October 28, 2008;
- USEPA, New Source Performance Standards, Test Methods and Procedures, Appendix A, 40 CFR Part 60; and
- USEPA, *Test Methods for Evaluating Solid Wastes Physical/Chemical Methods, Third Edition*, 1986 and updates (SW-846).

1.7 Comprehensive Performance Test Organization

The remaining sections of the plan provide the following information:

- Section 2 presents a discussion on the target OPLs for the TDU;
- Section 3 presents information on the TDU's feedstreams;
- Section 4 presents a detailed engineering description of the TDU;
- Section 5 presents a description of the continuous monitoring systems (CMS);
- Section 6 presents a description of the test operating conditions;
- Section 7 presents a summary of the test sampling and analysis procedures;
- Appendix A includes the QAPP; and
- Appendix B includes the CMS PET plan.

1.8 Document Revision History

The original version of this plan was submitted in November 2017. The nature and date of any future revisions will be summarized in Table 1-3.

TABLE 1-3
DOCUMENT REVISION HISTORY

REVISION	DATE	DESCRIPTION OF CHANGES
0	November 2017	Original submittal

2.0 OPERATING PARAMETER LIMITS

Condition V.G.11 of the permit requires CWM to monitor a number of process parameters to demonstrate continued compliance with the emission standards. The allowable limits for most of the process parameters are determined from the results of the CPT. The CPT has been designed to demonstrate performance of the TDU at conditions representative of the extreme range of normal conditions. The OPLs that CWM plans to demonstrate are discussed below and are summarized in Table 2-1.

add condenser outlet temp. every 10-deg C approximately doubles mercury input rate to the TOU. Also doubles individual condensible hydrocarbon compounds ,but that is compound specific. Should also be AWFCO

TABLE 2-1
TARGET OPERATING PARAMETER LIMITS

OPERATING PARAMETER	UNITS	TARGET LIMIT
Maximum hazardous waste feed rate	tph	10
Maximum treatment drum pressure	in. w.c.	0
Minimum thermal oxidizer unit temperature	°F	1,400
Maximum flue gas flow rate	acfm	4,000
Minimum venturi scrubber pressure drop	in. w.c.	35
Minimum packed bed scrubber liquid to gas ratio	gal/Macf	10
Minimum packed bed scrubber liquid flow rate	gpm	40
Minimum packed bed scrubber liquid pH	- - -	5.0
Minimum rotary drum temperature	°F	500
Maximum mercury feed rate	lb/hr	5.0
Maximum chlorine feed rate	lb/hr	80
Maximum semivolatile metals feed rate	lb/hr	200
Maximum low volatile metals feed rate	lb/hr	300

2.1 MAXIMUM HAZARDOUS WASTE FEED RATE

A limit on maximum hazardous waste feed rate is required by Condition V.G.11.a.i of the permit. The maximum hazardous waste feed rate OPL will be determined using the average of the maximum HRAs from the CPT runs. The maximum total hazardous waste feed rate OPL will be established on an HRA basis.

CWM will establish the OPL for maximum hazardous waste feed rate during the CPT condition. The target value for maximum hazardous waste feed rate to the TDU is 10 tons per hour (tph).

2.2 MAXIMUM TREATMENT DRUM PRESSURE

Condition V.G.11.a.i of the permit requires that the pressure in the treatment drum of the TDU be maintained below 0 inches water column (in. w.c.) when hazardous waste is in the unit. The pressure

must be monitored continuously. An automatic waste feed cutoff (AWFCO) must be initiated if the pressure exceeds 0 in. w.c. for more than fifteen seconds.

2.3 Minimum Thermal Oxidizer Unit Temperature

A limit on minimum TOU temperature is required by Condition V.G.11.a.iii of the permit. The minimum TOU temperature OPL will be determined using the average of the CPT run averages. The minimum TOU temperature OPL will be established on an HRA basis.

CWM will establish the OPL for minimum TOU temperature during the CPT condition. The target value for minimum TOU temperature is 1,400 degrees Fahrenheit (°F).

2.4 Maximum Flue Gas Flow Rate

A limit on maximum flue gas flow rate is required by Condition V.G.11.a.vi of the permit. The maximum flue gas flow rate OPL will be determined using the average of the maximum HRAs from the CPT runs. The maximum flue gas flow rate OPL will be established on an HRA basis.

CWM will establish the OPL for maximum flue gas flow rate during the CPT condition. The target value for maximum flue gas flow rate is 4,000 actual cubic feet per minute (acfm).

2.5 Minimum Venturi Scrubber Pressure Drop

A limit on minimum scrubber pressure drop is required by Condition V.G.11.a.vii of the permit. CWM will monitor this parameter at the venturi scrubber. The minimum venturi scrubber pressure drop OPL will be determined using the average of the CPT run averages. The minimum venturi scrubber pressure drop OPL will be established on an HRA basis.

CWM will establish the OPL for minimum venturi scrubber pressure drop during the CPT condition. The target value for minimum venturi scrubber pressure drop is 35 in. w.c.

2.6 Minimum Packed Bed Scrubber Liquid to Gas Ratio

A limit on minimum scrubber liquid to gas ratio is required by Condition V.G.11.a.viii of the permit. CWM will monitor this parameter at the packed bed scrubber. The minimum packed bed scrubber liquid to gas ratio OPL will be determined using the average of the CPT run averages. The minimum packed bed scrubber liquid to gas ratio OPL will be established on an HRA basis.

CWM will establish the OPL for minimum packed bed scrubber liquid to gas ratio during the CPT condition. The target value for minimum packed bed scrubber liquid to gas ratio is 10 gallons per thousand actual cubic feet (gal/Macf).

2.7 Minimum Packed Bed Scrubber Liquid Flow Rate

A limit on minimum scrubber liquid flow rate is required by Condition V.G.11.a.ix of the permit. CWM will monitor this parameter at the packed bed scrubber. The minimum packed bed scrubber liquid flow rate OPL will be determined using the average of the CPT run averages. The minimum packed bed scrubber liquid flow rate OPL will be established on an HRA basis.

CWM will establish the OPL for minimum packed bed scrubber liquid flow rate during the CPT condition. The target value for minimum packed bed scrubber liquid flow rate is 40 gallons per minute (gpm).

2.8 Minimum Packed Bed Scrubber Liquid pH

A limit on minimum scrubber liquid pH is required by Condition V.G.11.a.x of the permit. CWM will monitor this parameter at the packed bed scrubber. The minimum packed bed scrubber liquid pH OPL will be determined using the average of the CPT run averages. The minimum packed bed scrubber liquid pH OPL will be established on an HRA basis.

CWM will establish the OPL for minimum packed bed scrubber liquid pH during the CPT condition. The target value for minimum packed bed scrubber liquid pH is 5.0.

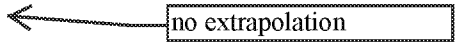
2.9 Minimum Rotary Drum Temperature

A limit on minimum rotary drum temperature is required by Condition V.G.11.b.i of the permit. The minimum rotary drum temperature OPL is established by the permit as 500°F. The minimum rotary drum temperature OPL will be established on an HRA basis.

2.10 Maximum Mercury Feed Rate

A limit on maximum mercury feed rate is required by Condition V.G.11.b.2 of the permit. The maximum mercury feed rate OPL will be determined using the average of the CPT run averages. The maximum mercury feed rate will not be monitored continuously and will not be part of the AWFCO system.

CWM will establish the OPL for maximum mercury feed rate during the CPT condition. The target value for maximum mercury feed rate is 5.0 pounds per hour (lb/hr).



2.11 Maximum Chlorine Feed Rate

A limit on maximum chlorine feed rate is required by Condition V.G.11.b.3 of the permit. The maximum chlorine feed rate OPL will be determined using the average of the CPT run averages. The maximum chlorine feed rate will not be monitored continuously and will not be part of the AWFCO system.

CWM will establish the OPL for maximum chlorine feed rate during the CPT condition. The target value for maximum chlorine feed rate is 80 lb/hr.

2.12 Maximum Semivolatile Metals Feed Rate

A limit on maximum SVM feed rate is required by Condition V.G.11.b.4 of the permit. The maximum SVM feed rate OPL will be determined using the average of the CPT run averages. The maximum SVM feed rate will not be monitored continuously and will not be part of the AWFCO system.

no extrapolation limit, needs 3x or 80% of emission limit max

CWM will establish the OPL for maximum SVM feed rate during the CPT condition. The maximum SVM feed rate OPL will be determined by extrapolating from the average of the test run averages (See Section 6.3). The target value for the extrapolated maximum SVM feed rate is 200 lb/hr.

2.13 Maximum Low Volatile Metals Feed Rate

A limit on maximum LVM feed rate is required by Condition V.G.11.b.5 of the permit. The maximum LVM feed rate OPL will be determined using the average of the CPT run averages. The maximum LVM feed rate will not be monitored continuously and will not be part of the AWFCO system.

no extrapolation limit, needs 3x or 80% of emission limit max

CWM will establish the OPL for maximum LVM feed rate during the CPT condition. The maximum LVM feed rate OPL will be determined by extrapolating from the average of the test run averages (See Section 6.3). The target value for the extrapolated maximum LVM feed rate is 300 lb/hr.

3.0 FEEDSTREAM CHARACTERIZATION

CWM will remediate organic hydrocarbon waste streams in the TDU. The TDU and TOU will be fired on natural gas.

3.1 WASTE STREAMS

Target waste streams for processing in the TDU include waste spent catalyst, crude oil tank bottoms, tank bottoms sludge, centrifuge solids, and other hydrocarbon contaminated materials. These wastes streams may carry many different hazardous waste codes. Table 3-1 presents the typical characteristics of the target waste streams.

TABLE 3-1
TARGET WASTE STREAMS

PARAMETER	UNITS	TYPICAL
Organic content	% wt	0 – 10
Chlorine	mg/kg	0 – 4,000
Arsenic	mg/kg	0 – 5,000
Beryllium	mg/kg	0 – 5,000
Cadmium	mg/kg	0 – 5,000
Chromium	mg/kg	0 – 5,000
Lead	mg/kg	0 – 5,000
Mercury	mg/kg	0 – 260

3.2 NATURAL GAS

Natural gas will be fed to the TDU and TOU. The natural gas is not expected to contain any regulated constituents in greater than trace quantities.

3.3 WASTE CHOSEN FOR THE COMPREHENSIVE PERFORMANCE TEST

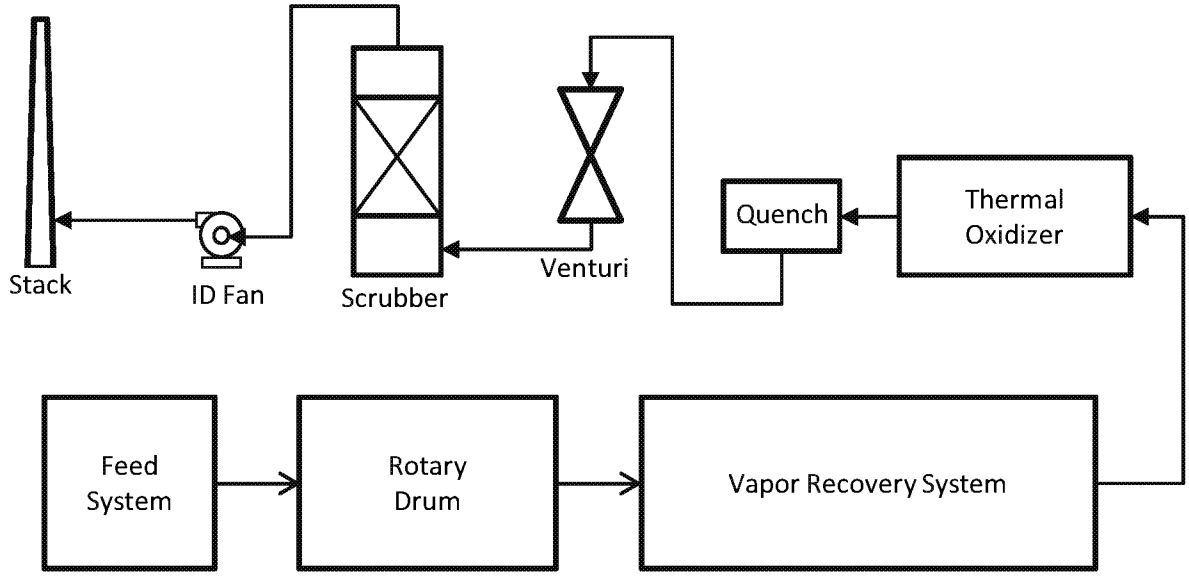
The waste streams for the CPT condition will be representative of the typical waste streams fed to the TDU. The actual waste streams will be chosen based on the current waste inventory at the time of the CPT. Spiking will be used to ensure that the CPT feed materials will provide worst case conditions for metals and chlorine loadings.

4.0 ENGINEERING DESCRIPTION

The TDU is designed to remediate organic hydrocarbon waste streams by thermally volatilizing their hydrocarbon constituents such that they are separated from the solid fraction, processed, and captured as a recovered oil. The TDU consists of a solids feed system, an indirectly heated rotary drum, a VRU, and a TOU. Gases exit the TOU and flow through a water quench, a venturi scrubber, and a packed bed scrubber. An ID fan downstream of the packed bed scrubber pulls the gases through the TOU and quench/scrubber system and pushes them out the stack.

Figure 4-1 provides a general process schematic diagram of the system.

FIGURE 4-1
PROCESS SCHEMATIC



4.1 SOLIDS FEED SYSTEM

The feed material is received by truck and offloaded into four below grade storage pits (T-701, T-702, T-703, and T-704) where it is homogenized and loaded directly into to the TDU feed hopper (F-1101), by way of specialized equipment. The live bottom feed hopper is equipped with a twin screw feed hopper screw conveyor (CO-1101) driven by two synchronous variable frequency drives. This allows material to be discharged from the hopper at a controlled rate. The feed hopper is designed for a maximum throughput rate of 10 tph. Material discharging from the hopper enters directly into the inclined TDU feed conveyor (CO-1102) through the feed conveyor chute (CH-1101). The feed conveyor transfers the feedstock to the TDU feed screw (CO-1203) through the double gate TDU inlet valve (CO-1201) and slide

gate valve (CO-1202). The TDU inlet valve and TDU feed screw coupled with the rotary seal system are designed to minimizes and prevents air leakage into the TDU processing chamber.

4.2 Rotary Drum

The TDU feed screw conveyor (CO-1203) inserts the feedstock directly into the indirectly heated TDU rotary drum (D-1201). As the unit is indirect fired, the burner flame and products of fuel combustion do not contact the feed material or vapors generated inside the rotary drum. The 56-foot long drum has an inner diameter of seven feet.

The TDU furnace built around the rotary drum is heated by four burners (B-1701,2,3,4), which are designed to fire natural gas. Each burner system is furnished complete with a dedicated combustion blower (K-1702,3,4,5) and fuel train.

As the drum rotates, the hydrocarbon laden material exposed to the metal surface of the drum is continuously turned to facilitate the transfer of heat from the heated furnace through the kiln wall to the feed material. Drum chains installed inside the rotary drum serve to break up any larger clumps of materials and prevent material from accumulating on the drum wall.

The typical operating temperature range of the rotary drum is 800 to 1,100°F. This is achieved under anaerobic (low oxygen) conditions thereby preventing oxidation of the hydrocarbon compounds.

CPMS for oxygen?? compliance with NFPA? should be AWFCO

The material inlet and outlet openings of the rotary drum are regulated by double chamber pneumatically operated airlock valves (inlet valve CO-1201 and discharge valve CO-1205). The drum is furnished with a rotary graphite seal on the feed end and a flexible leaf seal arrangement constructed with tempered steel on the discharge end. The flexible leaf seals are used to prevent air intrusion while still accommodating growth of the drum from thermal expansion. These features are designed to minimize air leakage into the rotary drum and downstream plant components. The process blower (K-1301 A/B) and associated venturi control valve (FCV-1302) maintain a negative vacuum pressure inside the rotary drum.

4.3 Vapor Recovery System

Vapors from the rotary drum are routed to the VRU for collection by way of the vapor transport conveyor (CO-1301). Process gases (hydrocarbons and water vapor) exiting the TDU are recovered in two ways: as liquids/oils and light end hydrocarbon gases. Liquids, oils, and water are collected in the VRU through condensation. Hydrocarbon vapors that do not condense to liquids are scrubbed and are sent to the TOU for destruction.

In the VRU, cool process water is pumped to the pre-scrubber (E-1301) via the process water pump (P-1401 A/B), where it is injected through a series of water nozzles. This water mixes with the hot process gases from the rotary drum, cooling the gases to approximately 130°F. As the gas stream is

cooled, the organics condense. This is the primary point of vapor recovery in the system. The condensed organics mix with the process cooling water and drain by gravity into an integrated sump tank below called the interceptor (F-1301). The function of the interceptor is to serve as a primary collection and separation point of process water, organics, and sludge. The ventilation blower (K-1302) vents any vapors emanating from the interceptor to the TOU.

The partially cooled vapors that pass through the pre-scrubber (E-1301) are processed further by passing through a variable throat venturi valve (FCV-1302), where additional water is sprayed onto the gas stream to further cool and remove solid particles from the gas stream. The gases exiting the venturi unit pass through the separator (E-1302) and two demister modules (V-1301,2), where water and oil droplets are further removed from the gas stream. The vapor stream then enters the tube and shell heat exchanger (E-1303), where the gas temperature is reduced to approximately 60°F. This promotes additional vapor condensation including water and organics.

demonstrate. establish OPL and AWFCO

4.4 Process Blower

Upon exiting the tube and shell heat exchanger, the gas is drawn into the process blower (K-1301 A/B). The process blower provides the primary motive force for gases through the rotary drum and VRU.

4.5 Thermal Oxidizer Unit

The non-condensable gases from the VRU are routed to the TOU for final treatment prior to discharge to the atmosphere. Vapors enter the TOU through a fail closed automatic on/off valve (FCV-1603) and subsequent flame arrestor (FA-1602). The TOU has a nominal volume of 460 cubic feet.

The TOU is heated with the TOU burner (B-1601), a natural gas fired burner with the option to burn diesel. The burner is rated for up to four million British thermal units per hour (MMBtu/hr) thermal input. The TOU is equipped with its own independent burner management system (BMS).

The TOU combustion blower (K-1601) provides combustion air for the TOU burner. In addition, a TOU dilution blower (K-1602) has been provided to ensure that adequate oxygen is available for combustion of the non-condensable gases and that temperature in the TOU is controlled.

4.6 Quench

The combustion gases exit the TOU and enter the quench chamber. The quench chamber cools the gases to the adiabatic saturation point. The quench chamber is a vertical spray chamber with four spray nozzles. One nozzle provides fresh water and the other three provide recirculated water from the sump.

4.7 Venturi Scrubber

The cooled gases exit the quench chamber and flow through a Verantis Environmental Solutions Group (Vernatis) Model VTV-50 standard throat venturi scrubber for removal of particulates. The vertical flow venturi scrubber is designed to operate at a pressure drop of up to 50 in. w.c.

4.8 Packed Bed Scrubber

The gases from the venturi scrubber enter the packed bed scrubber tangentially, in the lower section. The packed bed scrubber is designed to remove acid gases. The Verantis Model SPT-36-120 packed bed scrubber is a cylindrical vessel, three feet in diameter. The flue gases flow upward through a packed bed section and a demister section. The packed bed consists of a 10-foot deep bed of packing. The gases flow counter-current to the scrubber liquid flow that is introduced above the packed bed. A caustic solution is introduced into the scrubber liquid recycle loop as a reagent. The acid gases react with the caustic solution and form salts that are continuously purged in the packed bed scrubber blowdown.

4.9 Induced Draft Fan

The ID fan maintains a negative pressure in the TOU and quench/scrubber system. The ID fan is located after the packed bed scrubber. The ID fan is rated for 4,000 acfm at 45 in. w.c. The ID fan is equipped with a 75-horsepower motor and variable frequency drive for speed adjustment.

4.10 Stack

The flue gases from the ID fan are discharged through the stack to the atmosphere. The stack is 35 feet high with an internal diameter of 1.5 feet. The stack is fitted with sampling ports.

5.0 CONTINUOUS MONITORING SYSTEMS

Monitoring equipment for the TDU include systems for process control and for stack gas analysis. This equipment will enable the operators to maintain safe operation in compliance with the OPLs. This section of the plan provides an overview of the CMS associated with the TDU. These CMS are comprised of continuous process monitoring systems (CPMS) and continuous emissions monitoring systems (CEMS).

5.1 CONTINUOUS PROCESS MONITORING SYSTEMS

Various CPMS are required for the TDU to document compliance with the required OPLs. These monitors sample regulated operating parameters without interruption and evaluate the detector's response at least once every 15 seconds. The distributed control system (DCS) collects the data, calculates and records one-minute average (OMA) values for each required operating parameter, and calculates and records the appropriate rolling averages. Table 5-1 provides a description of each CPMS.

TABLE 5-1
CONTINUOUS PROCESS MONITORING SYSTEMS

MEASURED PARAMETER	INSTRUMENT DESCRIPTION
Hazardous waste feed rate	Flow meter
Rotary drum pressure	Pressure transmitter
Rotary drum temperature	Thermocouple and temperature transmitter
Thermal oxidizer unit temperature	Thermocouple and temperature transmitter
Flue gas flow rate	Flow meter
Venturi scrubber pressure drop	Differential pressure transmitter
Packed bed scrubber liquid flow rate	Flow meter
Paced bed scrubber liquid pH	pH transmitter and electrode

5.2 CONTINUOUS EMISSIONS MONITORING SYSTEMS

using only CO for CEMS requires THC during the CPT

CWM will monitor the concentrations of CO and oxygen in the stack gas. CWM will utilize a non-dispersive infrared analyzer for CO. The analyzer will be configured with two spans: a zero to 200 ppmv dry low-level span and zero to 3,000 ppmv high-level span. CWM will continuously correct these CO concentration measurements to seven percent oxygen. CWM will perform this correction with measurements of the stack gas oxygen concentration that will be collected by a paramagnetic analyzer. The analyzer will be configured with a single span of zero to 25 percent oxygen by volume on a dry basis.

The CEMS will be maintained as outlined in 40 CFR Part 266 Appendix IX, using a specified maintenance routine that includes:

- Routine maintenance;
- Daily auto calibration checks;
- Quarterly calibration error (CE) tests; and
- Annual relative accuracy test audits (RATAs).

Any problems identified by the above tests will be remedied through corrective action measures specific to the problem encountered.

5.3 Automatic Waste Feed Cutoff System

CWM will operate the TDU with a functioning system that immediately and automatically cuts off the hazardous waste feed when operating or emission limits are exceeded. Any malfunctions of the monitoring equipment or AWFCO system will also initiate an immediate and automatic cutoff of hazardous waste feed. The following OPLs will be linked to the AWFCO system:

- Maximum hazardous waste feed rate;
- Maximum treatment drum pressure;
- Minimum TOU temperature;
- Maximum flue gas flow rate;
- Minimum venturi scrubber pressure drop;
- Minimum packed bed scrubber liquid to gas ratio;
- Minimum packed bed scrubber liquid flow rate;
- Minimum packed bed scrubber liquid pH; and
- Maximum stack gas CO concentration corrected to seven percent oxygen.

maximum condenser exhaust temperature

All parameters will be linked to the AWFCO system on an HRA basis, except for treatment drum pressure, which will be linked on an instantaneous basis with a 15-second delay. An AWFCO will be initiated by the DCS. An AWFCO will stop the flow of waste to the TDU. The TOU and quench/scrubber system will continue to operate during an AWFCO.

5.4 Emergency Shutdown System

Emergency shutdown features are included to protect the equipment in the event of a malfunction. During an emergency shutdown, all waste feeds and fuel feeds are stopped. The trigger points for an emergency shutdown have been set independent of regulatory test conditions. These limits are based on equipment design and operating specifications and are considered good operating practices.

The following conditions will trigger a complete shutdown of the TDU:

- High oxygen content in rotary drum;
- High rotary drum temperature;

so they have an O2 analyzer and "interlock" that is like an AWFCO. what is the setpoint. is it permit enforceable.

- High rotary drum pressure:
- High TOU temperature;
- High TOU pressure;
- High VRU temperature; and
- Loss of compressed air supply.

is this the maximum condenser exhaust temperature? make it an OPL and AWFCO. Tie to three run average from CPT. Condenser temp strongly affects Hg emissions and hydrocarbon load on the TO. Every 10-deg C increase doubles Hg emission rate and condensible hydrocarbon input to the TO.

6.0 COMPREHENSIVE PERFORMANCE TEST OPERATIONS

CWM intends to perform one test condition to demonstrate that the TDU operates in conformance with the applicable performance standards stated in Condition V.G.10 of the permit. This section of the plan establishes the TDU operations that will be demonstrated during the testing. In addition, the preparation of materials to be fed during the testing, the amount of waste to be used, and a schedule for the testing are presented here.

6.1 TEST CONDITION

The CPT condition is designed to demonstrate operations of the TDU at the maximum total hazardous waste feed rate, the minimum TOU temperature, and the maximum flue gas flow rate. During the condition, CWM will demonstrate compliance with the DRE standard and the D/F, mercury, SVM, LVM, HCl/Cl_2, PM, and CO emission standards. Triplicate sampling runs will be performed for the condition. All operating conditions presented in this plan are calculated values; the actual conditions observed during the test may vary slightly from these values.

The following OPLs will be established during the CPT condition:

- Maximum hazardous waste feed rate;
- Minimum TOU temperature;
- Maximum flue gas flow rate;
- Minimum venturi scrubber pressure drop;
- Minimum packed bed scrubber liquid to gas ratio;
- Minimum packed bed scrubber liquid flow rate; and
- Minimum packed bed scrubber liquid pH.

During this condition, spiking will be performed to provide the POHC feed rate necessary for the DRE demonstration and to provide elevated feed rates of mercury, SVM, LVM, and chlorine to establish OPLs. A summary of the expected operating conditions for the CPT is provided in Table 6-1.

TABLE 6-1
TEST CONDITION

OPERATING PARAMETER	UNITS	TARGETS
Hazardous waste feed rate	tph	10
Mercury feed rate	lb/hr	5.0
Chlorine feed rate	lb/hr	80
Semivolatile metals feed rate [1]	lb/hr	70
Low volatile metals feed rate [1]	lb/hr	100
Rotary drum temperature	°F	500
Thermal oxidizer unit temperature	°F	1,400
Flue gas flow rate	acfm	4,000
Venturi scrubber pressure drop	in. w.c.	35
Packed bed scrubber liquid to gas ratio	gal/Macf	10
Packed bed scrubber liquid flow rate	gpm	40
Packed bed scrubber liquid pH	---	5.0

[1] The OPL for this parameter will be established from this condition using feed rate extrapolation.

6.2 PRINCIPAL ORGANIC HAZARDOUS CONSTITUENT

POHCs must be specified that are representative of the most difficult to destroy organic compounds in the hazardous waste feedstreams. The POHC must be chosen based on the degree of difficulty of destruction of the organic constituents in the waste. USEPA's primary ranking hierarchy was used as criteria in the selection of the POHC to ensure that the POHC chosen represents the widest range of compounds expected to be present in the waste feeds.

The POHC selection approach is based on the Thermal Stability Index (TSI) developed by Dellinger *et. al.*, at the University of Dayton Research Laboratory. This approach has been included in the USEPA's handbook *Guidance on Setting Permit Conditions and Reporting Trial Burn Results*. This ranking of compounds is based on their thermal stability, with the most stable being considered the most difficult to burn. The compounds are divided into seven classes. Compounds in Class 1 are considered the most difficult to destroy.

In addition to the TSI ranking, POHC selection is influenced by other criteria as follows:

- Physical state: The POHC must be limited to those constituents that are liquids at ambient temperatures and pressures to facilitate POHC handling and quantification;
- Stability: The compound selected as POHC must be sufficiently stable and have a boiling point suitable for conventional stack sampling techniques;
- Representative: The compound selected as a POHC must be representative of the types of constituents that the systems will typically handle; and

- Availability and cost: The compound selected as a POHC must be sufficiently available so that it can be purchased or formulated at a reasonable cost.

CWM would like the ability to process any hazardous constituent that could potentially be in a waste stream. Therefore, a TSI Class 1 POHC will be used for the CPT. USEPA guidance indicates that demonstration of DRE for a compound listed in Class 1 of the TSI is a sufficient demonstration for the most difficult to destroy compounds. Chlorobenzene has been chosen as the POHC for the CPT. This POHC is ranked 19th in Class 1 of the TSI. Chlorobenzene is suitable for current stack sampling methods. SW-846 Method 0030 is typically used to sample stack gas for chlorobenzene.

The amount of POHC detected in the stack gases will be used to determine the DRE for the system. DRE is determined for the POHC from the following equation:

$$DRE = \left[1 - \frac{W_{out}}{W_{in}}\right] \times 100$$

Main comment. VP of chlorobenzene is low, and not representative either for transport of the POHC to the TO, or HCl generation. either needs to be injected at TO, not the TDU. Or, be a VOC that has VP at 60F? Certainly places need for VRU temp as OPL. For DRE, POHC s/b benzene or toluene

where:

W_{out} = Mass emission rate of the POHC present in exhaust emissions prior to release to the atmosphere; and

W_{in} = Mass feed rate of the same POHC in the waste feed.

The POHC must be supplied to the unit in sufficient quantity to be detectable in the stack gas. Each stack sampling method has a minimum detection limit. Using the most conservative approach for the test, any compound which is found to be present in the stack gas at quantities below the method minimum detection limit or that is undetected in the stack gases is assumed to be present at the minimum detection limit. Therefore, it is very important to ensure that there is adequate quantity of POHC in the system feed to demonstrate the target 99.99 percent DRE.

The required POHC feed rate is determined by back-calculating from the stack sampling method detection limit and the target DRE (99.99 percent) using the following equation, which is derived from the DRE equation above:

$$W_{in} = W_{out} \times \left[\frac{100}{100 - DRE}\right]$$

Table 6-2 provides the POHC quantity that will be required for the CPT.

TABLE 6-2
PRINCIPAL ORGANIC HAZARDOUS CONSTITUENT QUANTITY

PARAMETER	UNITS	VALUE
Method detection limit	ng/dscf	70.8
Estimated stack flow rate	dscfm	1,300
Target destruction and removal efficiency	%	99.99
Emission rate required for detection	lb/hr	1.22E-05
Required POHC feed rate	lb/hr	0.12
Target POHC feed rate	lb/hr	10

The target POHC feed rate in Table 6-2 was chosen to provide an adequate safety factor above the calculated minimum required POHC feed rate and to provide a reasonable pumping rate for the spiking equipment.

6.3 METALS FEED RATE EXTRAPOLATION

CWM intends to utilize feed rate extrapolation to establish the SVM and LVM feed rate OPLs. The SVM and LVM feed rates and associated emission rates will be used to extrapolate to a higher allowable feed rate limits. The following equation will be used for the extrapolation:

$$FR_{LIMIT} = FR_{TB} \times \frac{ES}{EC_{TB}}$$

where:

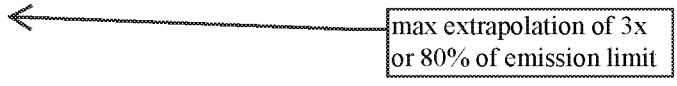
FR_{LIMIT} = Maximum allowable feed rate limit of SVM or LVM (lb/hr)

FR_{TB} = Feed rate of SVM or LVM demonstrated during the CPT (lb/hr)

ES = Emission standard for SVM or LVM (µg/dscm corrected to seven percent oxygen)

EC_{TB} = Emission concentration of SVM or LVM demonstrated during the CPT (µg/dscm corrected to seven percent oxygen)

As discussed in *Final Technical Support Document for HWC MACT Standards, Volume IV: Compliance With the HWC MACT Standards*, linear upward extrapolation can be conservatively used to allow for higher metals feedrate limits while continuing to ensure that the facility is within the emissions standards. This is because metals system removal efficiencies tend to stay the same or increase as the feedrate increases. This applies to all metals types and volatility groupings. Therefore, an extrapolated metals feed rate will most likely produce an actual emission rate that is lower than the predicted emission rate. A linear extrapolation should ensure that the emission standards will not be exceeded at the higher feed rates.



The target feed rates were chosen to ensure that the CPT condition would provide a reasonable representation of the system removal efficiency for SVM and LVM and to minimize the effects of method detection limits on the extrapolation calculations. Table 6-3 presents the target SVM and LVM feed rates and the expected extrapolated SVM and LVM OPL.

TABLE 6-3
FEED RATE EXTRAPOLATION

METAL GROUP	UNITS	TARGET FEED RATE	EXPECTED EXTRAPOLATED LIMIT
Semivolatile metals	lb/hr	70	200
Low volatile metals	lb/hr	100	300

6.4 WASTE SPIKING

To achieve the desired operating conditions for the CPT, CWM will be required to spike the waste stream with known quantities of POHC, metals, and chlorine. The following spiking materials will be used during the CPT:

- Chlorobenzene will be spiked to provide adequate POHC feed rate for the DRE determination (the chlorobenzene will also contribute to the chlorine feed rate);
- A mercury oxide powder will be spiked to maximize the feed rate of mercury to establish the mercury feed rate OPL;
- Potassium chloride will be spiked to maximize the feed rate of chlorine to establish the chlorine feed rate OPL;
- A lead oxide powder will be spiked to increase the feed rate of SVM to allow for accurate extrapolation of the SVM feed rate OPL; and
- A chromium oxide powder will be spiked to increase the feed rate of LVM to allow for accurate extrapolation of the LVM feed rate OPL.

A spiking contractor will operate the spiking system for chlorobenzene during the stack testing. The chlorobenzene will be supplied by the spiking contractor. The solid spiking materials will be fed to the system by hand by CWM operators. These materials will be prepackaged prior to the CPT. Table 6-4 summarizes the waste spiking planned for the CPT.

TABLE 6-4
WASTE SPIKING

SPIKING MATERIAL	SPIKING ELEMENT	ELEMENTAL SPIKING RATE (LB/HR)	EXPECTED ELEMENTAL CONCENTRATION (%WT)	TOTAL SPIKING RATE (LB/HR)
Chlorobenzene	POHC	10	100	10
	Chlorine	3.2	31.6	
Mercury oxide	Mercury	5	92.6	5.4
Potassium chloride	Chlorine	77	47.6	162
Lead oxide	SVM	70	92.8	75.4
Chromium oxide	LVM	100	68.4	146

The chlorobenzene will be pumped directly onto the hazardous waste feed conveyor, downstream of the feed rate measurement location. The spiking system will consist of the following major equipment:

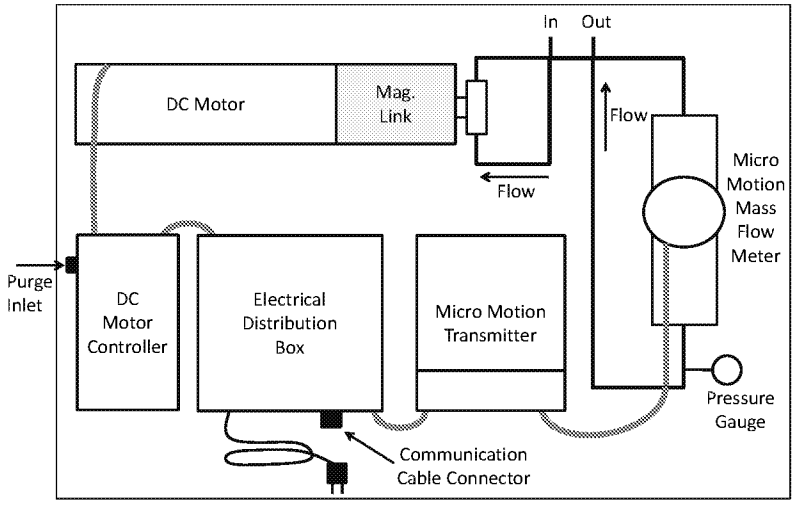
- Metering pump;
- Mass flow meter; and
- Process control and data acquisition computer.

The spiking material is connected to the suction of the pump from the supply drum with flexible tubing. The pump transfers the fluid through the mass flow meter and flexible tubing to the waste feed conveyor. The mass flow meter sends a signal to the process controller that will adjust the pump speed according to the set point. The data acquisition software will record the data continuously, providing a complete record of spiking rates. A schematic of a spiking system is provided in Figure 6-1.

HgO not appropriate. Elemental Hg is what is in the OBHW. VP orders of magnitude higher. Spike should be Hg elemental.

Chlorine spike should be VOC. Not salt. Salt has no VP, and does not transport to TO. Not valid demo for HCl. Chlorinated VOCs should be selected for chlorine spike. Inorganic chlorine cannot be included in the OPL for "chlorine" in the feed

FIGURE 6-1
SPIKING SYSTEM SCHEMATIC



The metals and chlorine spiking materials will be prepackaged prior to the CPT and will be manually placed on the conveyor during the test runs. The following spiking procedures will be used:

- For mercury oxide, a 1.1-pound package will be fed every 12 minutes;
- For potassium chloride, a 5.4-pound package will be fed every two minutes;
- For lead oxide, a 2.5-pound package will be fed every two minutes; and
- For chromium oxide, a 4.9-pound package will be fed every two minutes.

6.5 Test Materials and Quantities

Table 6-5 summarizes the quantity of materials required to conduct the testing. Triplicate runs will be carried out for the test condition. Test runs will require approximately 3.5 hours. An additional one hour of run time will be required for each day of testing in order to establish the steady state conditions and begin waste spiking before the start of the test runs, and one hour will be required between consecutive test runs. Therefore, for the purpose of calculating test quantities, a total of 13.5 hours has been used. We have also added approximately 40 percent to each total to allow for unforeseen delays.

Table 6-5
Test Material Quantities

Material	Units	Quantity
Waste	tons	200
Chlorobenzene	pounds	200
Mercury oxide	pounds	100
Potassium chloride	pounds	3,100
Lead oxide	pounds	2,800
Chromium oxide	pounds	1,400

6.6 Test Schedule

The sampling effort is estimated to require three days to complete. During this period, sampling equipment and instruments will be prepared and calibrated, supplies will be brought onsite, and sampling locations will be prepared. Although the onsite activities will dictate the actual timing, a preliminary schedule is presented in Table 6-6.

CWM has allowed one hour of run time in order to establish the steady-state conditions before the start of the test runs. Steady-state is defined as a condition when the TOU temperature and CO emissions remain stable with minimal fluctuation. If there is significant fluctuation at the end of the hour, the test will not begin until steady-state conditions are achieved. The waste spiking systems will be started at the beginning of the steady-state period. The waste spiking will be operated for at least one hour prior to performing any stack sampling.

TABLE 6-6
TRIAL BURN SCHEDULE

DAY	START	STOP	ACTIVITY
1	- - -	- - -	Set-up of sampling equipment
2	07:30	08:00	Pre-test meeting
	08:00	09:00	Cyclonic flow check and preliminary velocity check, setup of sampling equipment for Run 1
	09:00	12:30	Run 1
	12:30	13:30	Setup of sampling equipment for Run 2
	13:30	17:00	Run 2
3	08:00	09:00	Setup of sampling equipment for Run 3
	09:00	12:30	Run 3
	12:30	- - -	Break down sampling equipment

7.0 SAMPLING AND ANALYSIS

Sampling and analysis performed during the test conditions described in Section 6 will demonstrate the performance of the TDU with respect to the performance standards of Condition V.G.10 of the permit. The test condition will consist of three replicate test runs. For each run, samples will be collected using procedures described in the QAPP found in Appendix A. Since most of the proposed methods are standard reference methods, only brief descriptions are presented. Sample holding times will be consistent with the analytical requirements for the methods used.

7.1 WASTE SAMPLING AND ANALYSIS

Waste samples will be collected during each run of the CPT. The waste sampling location will be clearly labeled during the CPT. Table 7-1 summarizes the waste sampling and analysis procedures.

TABLE 7-1
WASTE SAMPLING AND ANALYSIS

SAMPLING METHOD	SAMPLING AMOUNT/ FREQUENCY	ANALYTICAL PARAMETER	ANALYTICAL METHOD [1,2]
Scoop sampling	Approximately 250 mL at 30-minute intervals	Mercury	SW-846 Method 7470A or 7471A
		Arsenic, beryllium, cadmium, chromium, and lead	SW-846 Method 6010B
		Chlorine	SW-846 Methods 5050 and 9056
		Chlorobenzene	SW-846 Method 8260B

[1] SW-846 refers to *Test Methods for Evaluating Solid Waste, Third Edition*.

[2] All methods will be performed in accordance with the laboratory's Louisiana Environmental Laboratory Accreditation Program (LELAP) approved standard operating procedures (SOPs).

The waste samples will be composited for each run into a one-gallon jar. At the conclusion of each run, the jar will be thoroughly mixed, and the sample will be divided into three 500-milliliter (mL) amber glass jars. The samples will be isolated from sources of contamination during the sampling and compositing efforts. One sample will be sent to the laboratory for analysis, one sample will be sent to the laboratory as a backup, and one sample will be archived onsite. The waste samples will be analyzed for chlorine and metals contents to develop the required OPLs and for chlorobenzene content to determine the DRE.

7.2 NATURAL GAS SAMPLING AND ANALYSIS

The natural gas will not be sampled and analyzed during the CPT. Analysis of this feedstream is not required for the compliance demonstrations.

7.3 Spiking Materials Sampling and Analysis

The spiking materials will not be sampled and analyzed during the CPT. These will be pure materials purchased for testing. The suppliers will certify the spiking materials' compositions.

7.4 Stack Gas Sampling and Analysis

During the CPT, the stack gas will be sampled for chlorobenzene, D/F, mercury, SVM, LVM, HCl/Cl_2, and PM emissions, and CO emissions will be monitored. The following sampling methods will be used:

- USEPA Methods 1, 2, 3A, and 4 for determination of stack sampling traverse points, gas flow rate, composition, and moisture content;
- SW-846 Method 0030 for measurement of chlorobenzene emissions;
- SW-846 Method 0023A for measurement of D/F emissions;
- USEPA Method 29 for measurement of mercury, SVM, and LVM emissions;
- USEPA Methods 5 and 26A combined for measurement of HCl/Cl_2 and PM emissions; and
- The facility's CEMS to monitor the concentrations of CO and oxygen in the stack gas.

Table 7-2 summarizes the stack gas samples to be taken, the parameters to be measured, and the duration of measurement.

Table 7-2
Stack Gas Sampling and Analysis

Sampling Method [1,2]	Sampling Duration	Analytical Parameter	Analytical Method [1,2]
USEPA Methods 1, 2, 3A, and 4	Not applicable	Traverse points, stack flow, composition, and moisture	Not applicable
SW-846 Method 0030	4 tube sets, 20 minutes per tube set	Chlorobenzene	SW-846 Method 8260B
SW-846 Method 0023A	180 minutes (minimum)	Dioxins and furans	SW-846 Methods 0023A and 8290A
USEPA Methods 5 and 26A	120 minutes (minimum)	Particulate matter, hydrogen chloride, and chlorine	USEPA Method 5
USEPA Method 29	120 minutes (minimum)	Arsenic, beryllium, cadmium, chromium, lead, and mercury	SW-846 Methods 6010C and 7471A
Facility CEMS	Continuous	Carbon monoxide	Facility CEMS
Facility CEMS	Continuous	Oxygen	Facility CEMS

[1] SW-846 refers to *Test Methods for Evaluating Solid Waste, Third Edition*. USEPA Method refers to New Source Performance Standards, Test Methods and Procedures, Appendix A, 40 CFR Part 60.

[2] All methods will be performed in accordance with the stack sampler's and laboratory's Louisiana Environmental Laboratory Accreditation Program (LELAP) approved standard operating procedures (SOPs).

THC by CEMS. RCRA permit requires CPT be compliant with 1207, demonstrating compliance with 1219. For the DRE demo @ >99.99% 1219.(b)(5) requires simultaneous CO and THC in the CPT, with THC being below 10 ppm and CO being below 100 ppm.

add section requiring desorber solids sampling for LDR compliance.

Appendix A:
QUALITY ASSURANCE PROJECT PLAN

WASTE MANAGEMENT

CHEMICAL WASTE MANAGEMENT, INC.

LAKE CHARLES FACILITY

HAZARDOUS WASTE OPERATING PERMIT EPA ID NO. LAD 000 777 201 AGENCY INTEREST NO. 742

QUALITY ASSURANCE PROJECT PLAN FOR THERMAL DESORPTION UNIT

NOVEMBER 2017

PREPARED BY:

pivotal engineering

Coterie ENVIRONMENTAL

PROJECT TEAM SIGNATURE PAGE

Facility: Chemical Waste Management, Inc., Lake Charles, Louisiana
Unit ID: Thermal Desorption Unit
Test Title: Comprehensive Performance Test

This quality assurance project plan (QAPP) has been developed for the comprehensive performance test (CPT) to be conducted for Chemical Waste Management, Inc., Thermal Desorption Unit. This QAPP has been distributed to and read by the signatories. By signing, the signatories agree to the appropriate information pertaining to their project responsibilities provided in the QAPP.

Performance Test Manager Ben Dabadie Chemical Waste Management, Inc.	Date
Project Coordinator S. Heather McHale, P.E. Coterie Environmental LLC	Date
Stack Testing Director Name: _____ Company: _____	Date
Waste Spiking Director Name: _____ Company: _____	Date
Quality Assurance Officer Meghan Skemp Coterie Environmental LLC	Date

Notes: The individuals listed above: 1) have received, read, and agreed to the appropriate information pertaining to their project responsibilities listed and provided in this QAPP and 2) agree that no testing methods have been modified.

These pages will be signed after approval of the plans.

LABORATORY SIGNATURE PAGE

Facility: Chemical Waste Management, Inc., Lake Charles, Louisiana
Unit ID: Thermal Desorption Unit
Test Title: Comprehensive Performance Test

This quality assurance project plan (QAPP) has been developed for the comprehensive performance test (CPT) to be conducted for Chemical Waste Management, Inc., Thermal Desorption Unit. This QAPP has been distributed to and read by the signatories. By signing, the signatories agree to the appropriate information pertaining to their project responsibilities provided in the QAPP. Laboratory representatives have reviewed the methods specified in the QAPP and certify that all analytical methods will be performed in accordance with their Louisiana Environmental Laboratory Accreditation Program (LELAP) approved standard operating procedures (SOPs), and any deviations will be noted.

Laboratory Project Manager	Date
Name: _____	
Company: _____	

Notes: The individuals listed above: 1) have received, read, and agreed to the appropriate information pertaining to their project responsibilities listed and provided in this QAPP and 2) agree that no testing methods have been modified.

These pages will be signed after approval of the plans.

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1.0 INTRODUCTION

This quality assurance project plan (QAPP) is being submitted by Chemical Waste Management, Inc., (CWM) for the Thermal Desorption Unit (TDU) to be operated at the Lake Charles Facility. The TDU is subject to the Resource Conservation and Recovery Act (RCRA) standards codified in Title 40 Code of Federal Regulations (CFR) Part 264 Subpart X and Louisiana Administrative Code (LAC) Title 33 Part V Chapter 32. The applicable operating requirements for the TDU are specified in Section V.G of Hazardous Waste Operating Permit No. LAD000777201-0P-RN-MO-I. This QAPP describes the quality assurance (QA) and quality control (QC) program associated with the comprehensive performance test (CPT) to be conducted for the TDU.

1.1 FACILITY OVERVIEW

The CWM Lake Charles Facility is a commercial hazardous waste treatment, storage, and disposal facility located on a 390-acre tract near Carlyss, Louisiana. John Brannon Road divides the facility into two parts: 270 acres to the west and 120 acres to the east. Incoming waste is currently treated as required and then disposed in Hazardous Waste Landfill Cell 8, located on the west side of John Brannon Road, adjacent to the other operational areas of the facility. CWM has added two new technologies to the current operations at the Lake Charles Facility. These new technologies offer CWM opportunities to treat waste and recover oil for resale. The two new systems consist of Oil Recovery Units and the TDU.

The street address of the CWM Lake Charles Facility is:

Chemical Waste Management, Inc.
Lake Charles Facility
7170 John Brannon Road
Carlyss, Calcasieu Parish, Louisiana 70665

All correspondence should be directed to the following facility contact:

Benjamin Dabadie
Environmental Manager
Chemical Waste Management, Inc.
Lake Charles Facility
7170 John Brannon Road
Sulphur, Louisiana 70665
Phone: 337-583-3676
Email: bdabadie@wm.com

1.2 Unit Overview

The TDU is designed to remediate organic hydrocarbon waste streams by thermally volatilizing their hydrocarbon constituents such that they are separated from the solid fraction, processed, and captured as a recovered organic material. The TDU consists of a solids feed system, an indirectly heated rotary drum, a Vapor Recovery Unit (VRU), and a Thermal Oxidizer Unit (TOU). Gases exit the TOU and flow through a water quench, a venturi scrubber, and a packed bed scrubber. An induced draft (ID) fan downstream of the packed bed scrubber pulls the gases through the TOU and quench/scrubber system and pushes them out the stack.

1.3 Comprehensive Performance Test Overview

The CPT is designed to demonstrate compliance with the emission standards being included as applicable requirements in the permit. The CPT will also establish the operating parameter limits (OPLs) required by Condition V.G.11 of the permit. One test condition will be performed for the TDU during the CPT. The CPT condition will be performed to demonstrate compliance with the destruction and removal efficiency (DRE) standard and the dioxins and furans (D/F), mercury, semivolatile metals (SVM), low volatile metals (LVM), hydrogen chloride and chlorine (HCl/Cl_2), particulate matter (PM), and carbon monoxide (CO) emission standards while operating the TDU at the maximum total hazardous waste feed rate, the minimum TOU temperature, and the maximum flue gas flow rate. The venturi scrubber will be operated at the minimum pressure drop, and the packed bed scrubber will be operated at the minimum liquid to gas ratio, the minimum liquid flow rate, and the minimum liquid pH.

This CPT is being coordinated by Coterie Environmental LLC (Coterie) under the direction of CWM personnel. Coterie is responsible for the test protocol development and implementation and will oversee the TDU's operations and the stack sampling activities during the test program. A stack sampling contractor will perform all of the stack sampling for the test program. This contractor will be responsible for all emissions samples collected during the test program, with oversight by Coterie. A spiking contractor will provide waste spiking services during the test program. The emissions samples will be sent to qualified laboratories for analysis.

1.4 Quality Assurance Project Plan Organization

This QAPP has been prepared following the United States Environmental Protection Agency (USEPA) document entitled *Preparation Aids for the Development of Category I Quality Assurance Project Plan*. The QAPP will serve as an essential guidance by which the CPT will be performed. The QAPP defines all aspects of QA/QC procedures and establishes sampling and analytical quality indicators that will demonstrate achievement of the test objectives. Additionally, this QAPP defines precision and accuracy criteria for all of the required measurements that will be used to demonstrate that all associated test data is of sufficient quality to demonstrate compliance. The remaining sections of the QAPP provide the following information:

- Section 2 presents information on the CPT project team;

- Section 3 describes the CPT sampling procedures;
- Section 4 presents sample handling and documentation information;
- Section 5 discusses the CPT analytical procedures;
- Section 6 presents the CPT data quality objectives;
- Section 7 discusses calibration procedures and preventative maintenance;
- Section 8 discusses data reduction, validation, and reporting procedures;
- Section 9 discusses QA reports;
- Section 10 includes a list of reference documents for the QAPP;
- Attachment A includes the project team contact information; and
- Attachment B includes resumes for key project team members.

1.5 DOCUMENT REVISION HISTORY

The original version of this plan was submitted in November 2017. The nature and date of any future revisions will be summarized in Table 1-1.

TABLE 1-1
DOCUMENT REVISION HISTORY

REVISION	DATE	DESCRIPTION OF CHANGES
0	November 2017	Original submittal

2.0 ORGANIZATION OF PERSONNEL, RESPONSIBILITIES, AND QUALIFICATIONS

CWM and their contractors will have specific and unique duties in the implementation of the CPT project. The project team duties are summarized below. A project organization flow chart is provided in Figure 2-1. Any key personnel that become unavailable will be replaced by equally qualified personnel prior to test mobilization. This QAPP will be distributed to key project personnel for review prior to the CPT. These personnel will sign the appropriate QAPP signature page.

Key personnel contact information is summarized in Attachment A. Resumes for key project team members are provided in Attachment B.

CWM, through the Performance Test Manager, will:

- Procure and prepare waste feeds;
- Operate the TDU at the designated conditions;
- Collect waste samples; and
- Report all feed rates and TDU process parameters.

Coterie, through the Project Coordinator, will:

- Serve as liaison with regulatory agencies and the CPT team;
- Provide oversight for the project; and
- Prepare the final report.

The stack sampling contractor, through the Stack Testing Director and stack sampling field team, will:

- Perform stack gas sampling;
- Implement the QA program for the emissions testing and sample analysis;
- Provide custody of all samples generated by the test efforts;
- Transport the samples to the laboratories for analysis; and
- Prepare the stack and process sampling report and supporting documentation.

The waste spiking contractor, through the Waste Spiking Director and spiking crew, will:

- Perform spiking of chlorobenzene;
- Prepare pre-weighed packets of mercury oxide, potassium chloride, lead oxide, and chromium oxide; and
- Provide a spiking report.

The laboratories will:

- Perform sample analyses;
- Perform method and QAPP specified QA/QC;
- Provide a detailed case narrative; and
- Generate analytical data reports.

The Quality Assurance Officer will:

- Oversee sampling and analysis procedures;
- Provide input and document the observation of testing and corrective actions; and
- Review all analytical results.

2.1 Performance Test Manager

Ben Dabadie will serve as the CWM Performance Test Manager. Mr. Dabadie will be responsible for directing CWM personnel in the operations of the TDU during the testing. He will also ensure that all necessary unit operating data is collected during the test.

2.2 Project Coordinator

Heather McHale of Coterie will provide coordination and oversight during the test program. Ms. McHale will ensure that all test team members communicate throughout the test program and that the objectives of the CPT plan are met (*i.e.,* test operating conditions, field sampling objectives).

2.3 Stack Testing Director

A qualified representative from the stack sampling contractor will serve as the Stack Testing Director for the CPT. This individual will be responsible for technical supervision of the project, data interpretation, and overall report preparation and will coordinate with all laboratories and outside service providers. A project manager, who reports to this person, will oversee the field crew during the testing, will be responsible for all aspects of sample collection, and will report any deviations immediately to the Performance Test Manager and Project Coordinator. The Stack Testing Director may or may not be onsite during the CPT.

2.4 Field Team

The field team will be made up of CWM and contractor personnel. CWM operators will be responsible for collecting all waste samples. The stack sampling field team will collect all of the stack gas samples and will take custody of the waste samples from the operators at the conclusion of the testing.

2.5 WASTE SPIKING DIRECTOR

A qualified representative from the waste spiking contractor will serve the Waste Spiking Director and will provide direction of the spiking efforts. This individual will ensure that the spiking crew is staffed with experienced technicians. He may or may not be onsite during the CPT.

2.6 LABORATORIES

The laboratories will be specified by the designated stack sampling contractor and will be approved by CWM. The selected laboratories will be experienced in conducting analyses per the methods described in this QAPP. Prior to test execution, the QAPP will be submitted to the various laboratories for their review and understanding of their project responsibilities. Each laboratory representative will sign the appropriate QAPP signature page. The laboratory representative will be responsible for ensuring that the laboratory follows all analytical methods specified in the QAPP in accordance with their Louisiana Environmental Laboratory Accreditation Program (LELAP) approved standard operating procedure (SOPs), that a detailed case narrative is prepared that addresses all analytical deviations, and that a complete laboratory report is provided.

2.7 QUALITY ASSURANCE OFFICER

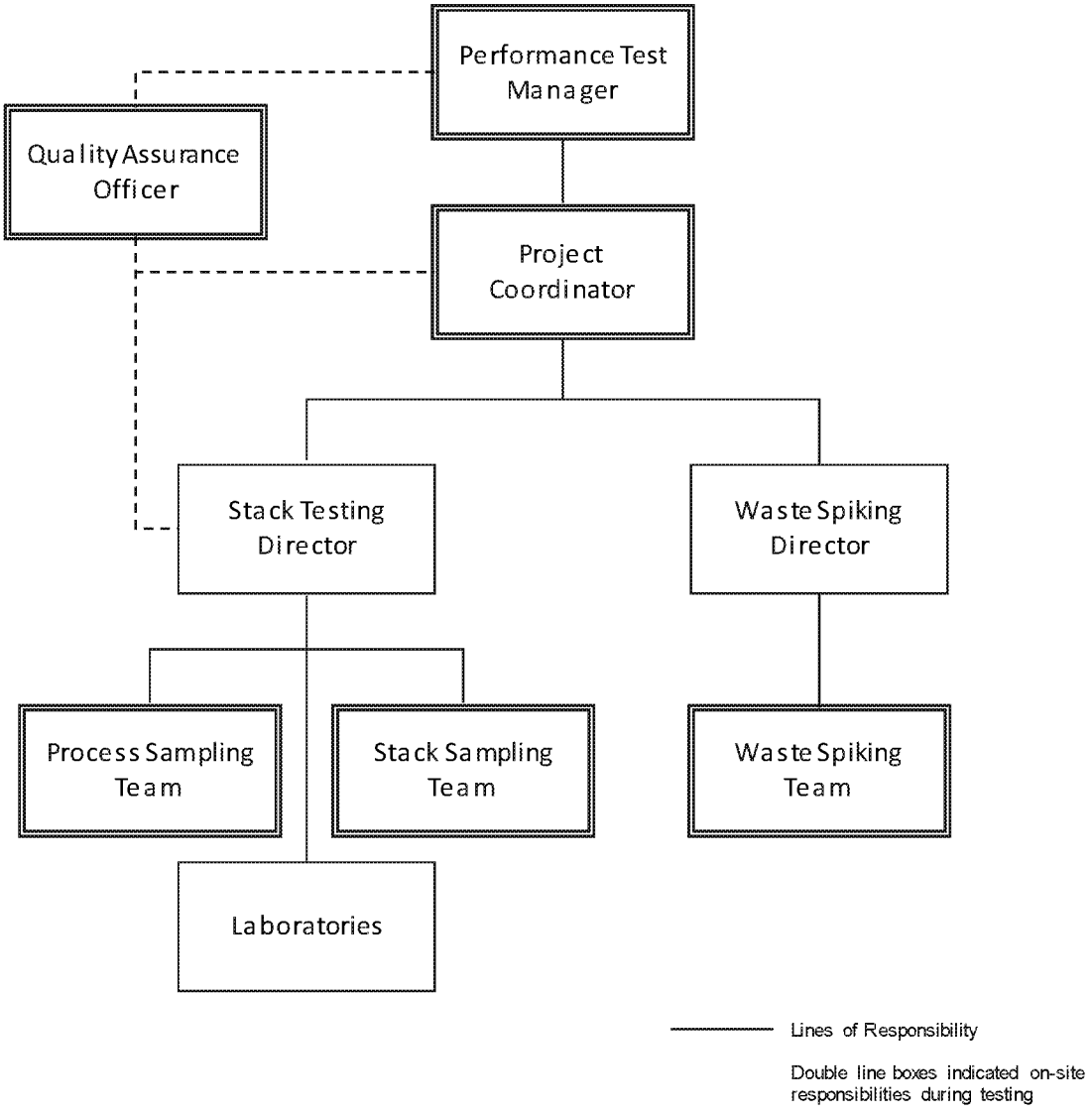
The Quality Assurance Officer will have overall QA authority for all aspects of the test program. The Quality Assurance Officer is organizationally independent of the test program technical staff and is not directly responsible for making any measurements during the test. Meghan Skemp of Coterie has been selected as the Quality Assurance Officer. In this role, Ms. Skemp will ensure that all field and lab procedures are performed in compliance with QAPP objectives and will perform the entire scope of duties outlined for Quality Assurance Officers by the Louisiana Department of Environmental Quality (LDEQ) on their website.

Some of the specific duties that the Quality Assurance Officer will perform include:

- Providing additional oversight for sampling activities during the testing;
- Providing oversight for sample handling, shipment, and laboratory receipt after the samples have been taken;
- Auditing onsite sampling procedures, sampling equipment, and QA/QC activities;
- Coordinating with the Performance Test Manager, the Project Coordinator, and agency personnel onsite to resolve any conflicts during the testing;
- Resolving any potential conflicts with laboratories conducting the analyses and communicating all changes to the field team prior to the actual stack testing;
- Providing laboratory communications oversight prior to, during, and after the sampling activities take place;
- Providing documentation of all laboratory communications for the duration of the project to ensure that potential QA/QC issues encountered during sample collection, analysis, and data validation are accounted for in the assessment of data usability;

- Providing final data validation through a review of all laboratory reports for data quality issues, including review of case narratives for acceptability; and
- Providing a QA summary report that includes a listing of all deviations from the CPT plan or QAPP with corrective actions and the effect on data quality.

FIGURE 2-1
PROJECT ORGANIZATION



3.0 SAMPLING PROCEDURES

This section provides descriptions of the waste and stack sampling procedures to be performed during the CPT.

3.1 WASTE SAMPLING

Waste samples will be collected during each run of the CPT. The waste sampling location will be clearly labeled during the CPT. Table 3-1 summarizes the waste sampling procedures.

TABLE 3-1
WASTE SAMPLING

WASTE	SAMPLING METHOD	SAMPLING AMOUNT/ FREQUENCY
Hydrocarbon contaminated waste stream	Scoop sampling	Approximately 250 mL at 30-minute intervals

The waste samples will be composited for each run into a one-gallon jar. At the conclusion of each run, the jar will be thoroughly mixed, and the sample will be divided into three 500-milliliter (mL) amber glass jars. The samples will be isolated from sources of contamination during the sampling and compositing efforts. One sample will be sent to the laboratory for analysis, one sample will be sent to the laboratory as a backup, and one sample will be archived onsite.

3.2 NATURAL GAS SAMPLING

The natural gas will not be sampled during the CPT. Sampling of this feedstream is not required for the compliance demonstrations.

3.3 SPIKING MATERIALS SAMPLING

The spiking materials will not be sampled and analyzed during the CPT. These will be pure materials purchased for testing. The suppliers will certify the spiking materials' compositions.

3.4 STACK GAS SAMPLING

The stack gas sampling will follow the methods documented in 40 CFR Part 60 Appendix A (USEPA Methods) and *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846 Methods). Brief descriptions of these methods are provided in this section. Any modifications to prescribed USEPA or SW-846 test methods are outlined in the sampling procedure descriptions below. Table 3-2 summarizes the sampling procedures to be used during the CPT for collection of stack gas samples.

TABLE 3-2
STACK GAS SAMPLING

PARAMETER	SAMPLING METHOD	SAMPLE FRACTION(S)
Traverse points, gas flow rate, composition, and moisture content	USEPA Methods 1, 2, 3A, and 4	Not applicable
Particulate matter	USEPA Method 5	Filter and front-half acetone rinse
Hydrogen chloride and chlorine	USEPA Method 26A	Sulfuric acid impingers contents and rinses
		Sodium hydroxide impingers contents and rinses
Arsenic, beryllium, cadmium, chromium, lead, and mercury	USEPA Method 29	Filter and front-half nitric acid rinse
		Nitric acid/hydrogen peroxide impinger contents and rinses
		Knockout impinger contents and rinses
		Potassium permanganate impinger contents and rinses
		Potassium permanganate impinger hydrochloric acid rinse
Dioxins and furans	SW-846 Method 0023A	Filter
		Front-half acetone, methylene chloride, and toluene rinse
		Back-half acetone, methylene chloride, and toluene chloride rinse
		XAD-2 resin
Chlorobenzene	SW-846 Method 0030	Tenax™ resin
		Tenax™ resin/charcoal
		Condensate
Carbon monoxide	Facility CEMS	Not applicable
Oxygen	Facility CEMS	Not applicable

3.4.1 SAMPLING POINT DETERMINATION – USEPA METHOD 1

The number and location of the stack gas sampling points will be determined according to the procedures outlined in USEPA Method 1. Verification of absence of cyclonic flow will be conducted prior to testing by following the procedure described in USEPA Method 1. The cyclonic flow check will be performed once for the CPT.

3.4.2 FLUE GAS VELOCITY AND VOLUMETRIC FLOW RATE – USEPA METHOD 2

The flue gas velocity and volumetric flow rate will be determined according to the procedures outlined in USEPA Method 2. Velocity measurements will be made using Type S pitot tubes conforming to the geometric specifications outlined in USEPA Method 2. Differential pressures will be measured with fluid manometers. Effluent gas temperatures will be measured with thermocouples equipped with digital readouts.

3.4.3 Flue Gas Composition and Molecular Weight – USEPA Method 3A

The composition of the bulk gas and the gas molecular weight at the stack (concentrations of carbon dioxide and oxygen) will be determined by USEPA Method 3A. The stack sampling contractor will supply oxygen and carbon dioxide analyzers and all other associated equipment. The analyzers will be calibrated according to the procedures outlined in the method. A continuous sample of stack gas will be withdrawn via a sample probe. The gas will be filtered and passed through a conditioning system for removal of particulates and moisture prior to being sent to the analyzer.

The calculated molecular weight will be used for all isokinetic calculations. The measured oxygen concentration will also be used to correct emission concentrations to seven percent oxygen.

3.4.4 Flue Gas Moisture Content – USEPA Method 4

The flue gas moisture content will be determined in conjunction with each isokinetic train according to the sampling and analytical procedures outlined in USEPA Method 4. The impingers will be connected in series and will contain reagents as described for each sampling method. The impingers will be housed in an ice bath to ensure condensation of the moisture from the flue gas stream. Any moisture that is not condensed in the impingers is captured in the silica gel. Moisture content is determined by weighing the various sample fractions.

3.4.5 Particulate Matter, Hydrogen Chloride, and Chlorine – USEPA Methods 5 and 26A

The sampling and analytical procedures outlined in USEPA Method 5 and 26A will be used to determine PM and HCl/Cl_2 concentrations in the stack gas during the CPT condition. The sampling train will consist of a Teflon mat or quartz fiber filter, one impinger containing 50 mL of 0.1 Normal (N) sulfuric acid (if necessary due to high moisture conditions), two impingers each containing 100 mL of 0.1 N sulfuric acid, two impingers each containing 100 mL of 0.1 N sodium hydroxide, and an impinger containing at least 250 grams of silica gel. If deemed necessary based on site-specific conditions (*i.e.,* expected high HCl concentrations), an additional empty impinger may be placed between the acid and alkaline impingers to ensure that the HCl and Cl_2 fractions are completely isolated. A diagram of the sampling train is presented in Figure 3-1.

All sampling train components will be constructed of materials specified in the methods and will be cleaned and prepared per method specifications prior to testing. The probe and filter temperatures will be maintained between 248 degrees Fahrenheit (°F) and 273°F. The sampling runs will be performed within ± 10 percent of isokinetic conditions. The total sampling time will be a minimum of 120 minutes.

Sample recovery procedures will follow those outlined in the respective test methods. In accordance with Section 8.2.3 of USEPA Method 26A, sodium thiosulfate will be added to the alkaline impinger contents during recovery. Recovery of the USEPA Method 5/26A sampling train will result in the sample fractions listed in Table 3-2. For the USEPA Method 5 portion of the recovery, the filter will be packaged in a Petri dish, and the probe rinse will be collected in a glass jar. All impinger rinses and contents associated with the USEPA Method 26A recovery will be collected and shipped in amber glass jars.

3.4.6 Arsenic, Beryllium, Cadmium, Chromium, Lead, and Mercury – USEPA Method 29

The sampling procedures outlined in USEPA Method 29 will be used to determine the concentrations of arsenic, beryllium, cadmium, chromium, lead, and mercury in the stack gas during the CPT condition. The sampling train will consist of a set of six to seven impingers. If high moisture conditions are expected, the first impinger will be an empty knockout impinger. This impinger is optional and will only be used if necessary. The next two impingers will each contain 100 mL of a five percent nitric acid (HNO_3) and ten percent hydrogen peroxide solution (H_2O_2) solution. These impingers are followed by an empty impinger. The next two impingers will each contain 100 mL of a four percent potassium permanganate ($KMnO_4$) and ten percent sulfuric acid (H_2SO_4) solution. The final impinger will contain between 200 and 300 grams of silica gel. A detailed description of the types of impingers used in this sampling train can be found in USEPA Method 29. A diagram of the sampling train is presented in Figure 3-2.

All sampling train components will be constructed of materials specified in the method and will be cleaned and prepared per method specifications prior to testing. The probe and filter temperatures will be maintained between 223°F and 273°F. The sampling runs will be performed within ± 10 percent of isokinetic conditions. The total sampling time and minimum sample volume will be determined in accordance with method and/or rule requirements. If no such specifications are provided in the test method or applicable regulation, the total sample volume will be set such that the resulting detection limit provides the necessary level of analytical resolution. The total sample time will be established based upon the number of sample points and the minimum required sample volume.

Sample recovery procedures will follow those outlined in the test method. The USEPA Method 29 sampling train will produce the sample fractions listed in Table 3-2. The filter will be packaged in a Petri dish for shipping. All other sample fractions will be collected in amber glass jars. The filter and front half rinse and the contents and rinses from the HNO_3/H_2O_2 impingers will be analyzed for all target metals. The contents and rinses from the empty and $KMnO_4$ impingers will be analyzed for mercury only.

3.4.7 Dioxins and Furans – SW-846 Method 0023A

The sampling procedures outlined in SW-846 Method 0023A will be used to determine D/F concentrations in the stack gas during the CPT condition. The sampling train will consist of a glass fiber filter and coil condenser followed by a XAD-2 resin trap and a series of impingers. A total of four impingers will be used in the sampling train. The first of these impingers will be empty and will be followed by two impingers each containing 100 mL of high performance liquid chromatography (HPLC) water. These impingers will be followed by an impinger containing at least 250 grams of silica gel. A recirculating pump will also be connected to the sampling train to continuously circulate cold water to the condenser and resin trap in order to maintain the resin trap temperature below 68 degrees Fahrenheit (°F). A diagram of the sampling train is presented in Figure 3-3.

In preparation for the sampling event, a number of labeled sampling standards will be introduced inside the resin to monitor sampling efficiencies as well as to provide insights to the sample preservation and storage conditions. Upon preparation of the spiked resin traps, a separate fraction of resin from the same batch will be spiked the same day using the same solutions used in the field sampling modules and will be refrigerated in the laboratory until the return of the field samples. At such time, the control resin will become the laboratory method blank.

All sampling train components will be constructed of materials specified in the methods and will be cleaned and prepared per method specifications prior to testing. The probe and filter temperatures will be maintained between 223°F and 273°F (120 ± 14 degrees Celsius (°C)). The sampling runs will be performed within ±10 percent of isokinetic conditions. A minimum of 88.3 dry standard cubic feet (dscf) (2.5 dry standard cubic meters (dscm)) of sample gas will be collected over a minimum of 180 minutes.

The sampling train will be recovered according to the procedures specified in the method. The recovery of the sampling train will result in the sample fractions listed in Table 3-2. The filter will be shipped in a Petri dish, and all rinses will be collected in amber glass jars. The XAD-2 resin will be wrapped and shipped in the glass trap.

The front-half and back-half sample fractions will be spiked with extraction standards. The XAD-2 resin and front- and back-halves of the sampling train will be analyzed separately for D/F by SW-846 Methods 0023A and 8290A (high resolution gas chromatograph/high resolution mass spectroscopy).

3.4.8 Chlorobenzene – SW-846 Method 0030

The sampling procedures outlined in SW-846 Method 0030 will be used to determine chlorobenzene concentrations in the stack gas during the CPT condition. The sampling train draws effluent stack gas through a series of sorbent traps. The first trap will contain Tenax™ resin, and the second will contain a section of Tenax™ followed by a section of activated charcoal. A water-cooled condenser will be arranged so that condensate will drain vertically through the traps. New Teflon sample transfer lines will be used, and the sampling train will use greaseless fittings and connectors. The Tenax™ resin will be cleaned and tested, prior to testing, according to the QA requirements of the method. A diagram of the sampling train is presented in Figure 3-4.

Four pairs of sorbent traps will be collected per run. The sampled gas will be passed through each pair of traps for 20 minutes, resulting in a total sampling time of 80 minutes per test run. One sample of condensate will be collected per sampling run (four pairs). Three of the four pairs of tubes will be analyzed for each run. The fourth pair will be archived and will be analyzed if any of the other three tube sets cannot be analyzed. The sampling probe will be kept at or above 130°C during sampling. The sampling train will be operated at a sampling rate of approximately 1.0 liter per minute (L/min) for a total of 20 liters (L) of gas per sample.

Each pair of traps will be analyzed separately to evaluate breakthrough. Breakthrough is present if the catch on the second tube exceeds 30 percent of the catch on the first tube and is above 75 nanograms (ng).

3.4.9 Carbon Monoxide and Oxygen

The facility's continuous emissions monitoring systems (CEMS) will be used to measure the concentration of CO and oxygen in the stack gas during the CPT condition.

A continuous sample of stack gas will be withdrawn via a sample probe. The sampled gas will be filtered and will be passed through a conditioning system for removal of particulates and moisture prior to being sent to the analyzer. The CO concentration will be reported in parts per million by volume dry basis (ppmv dry) corrected to seven percent oxygen.

The permit requires that the CO and oxygen CEMS comply with the requirements of 40 CFR Part 266 Appendix IX. Performance and calibration of the CEMS during the CPT will follow the requirements of 40 CFR Part 266 Appendix IX and the continuous monitoring systems (CMS) performance evaluation test (PET) plan.

3.5 Sampling Quality Control Procedures

Specific sampling QC procedures will be followed to ensure the production of useful and valid data throughout the course of this test program.

Prior to the start of testing, all sampling equipment will be thoroughly checked to ensure clean and operable components and to ensure that no damage occurred during shipping. Once the equipment has been set up, the manometer used to measure pressure across the pitot tube will be leveled and zeroed, and the number and location of all sampling traverse points will be checked.

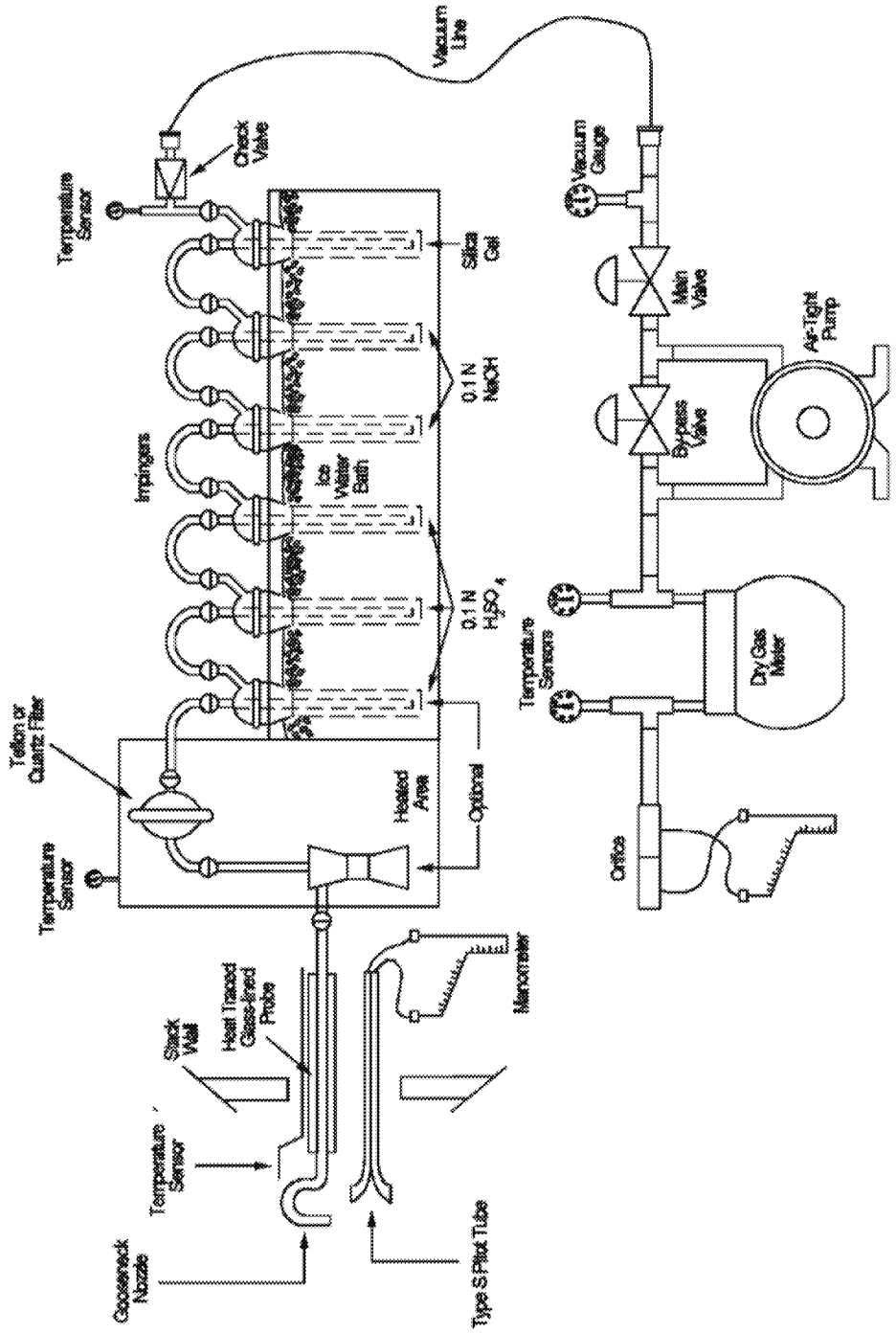
At the start of each test day and throughout the testing, all sample train components will be checked to ensure that they remain in good condition and continue to operate properly. Electrical components will be checked for damaged wiring or bad connections. All glassware will be inspected to make sure no cracks or chips are present.

All sampling trains will be assembled and recovered in a mobile laboratory to ensure a clean environment, free of uncontrolled dust. To ensure that the sampling trains are free of contamination, all glassware will remain sealed until assembly of the sampling train.

Pre-test and post-test leak checks will be performed for each sampling train, as required by the respective test methods. Care will be taken to make sure that all sampling trains are being operated within the specifications of their respective method.

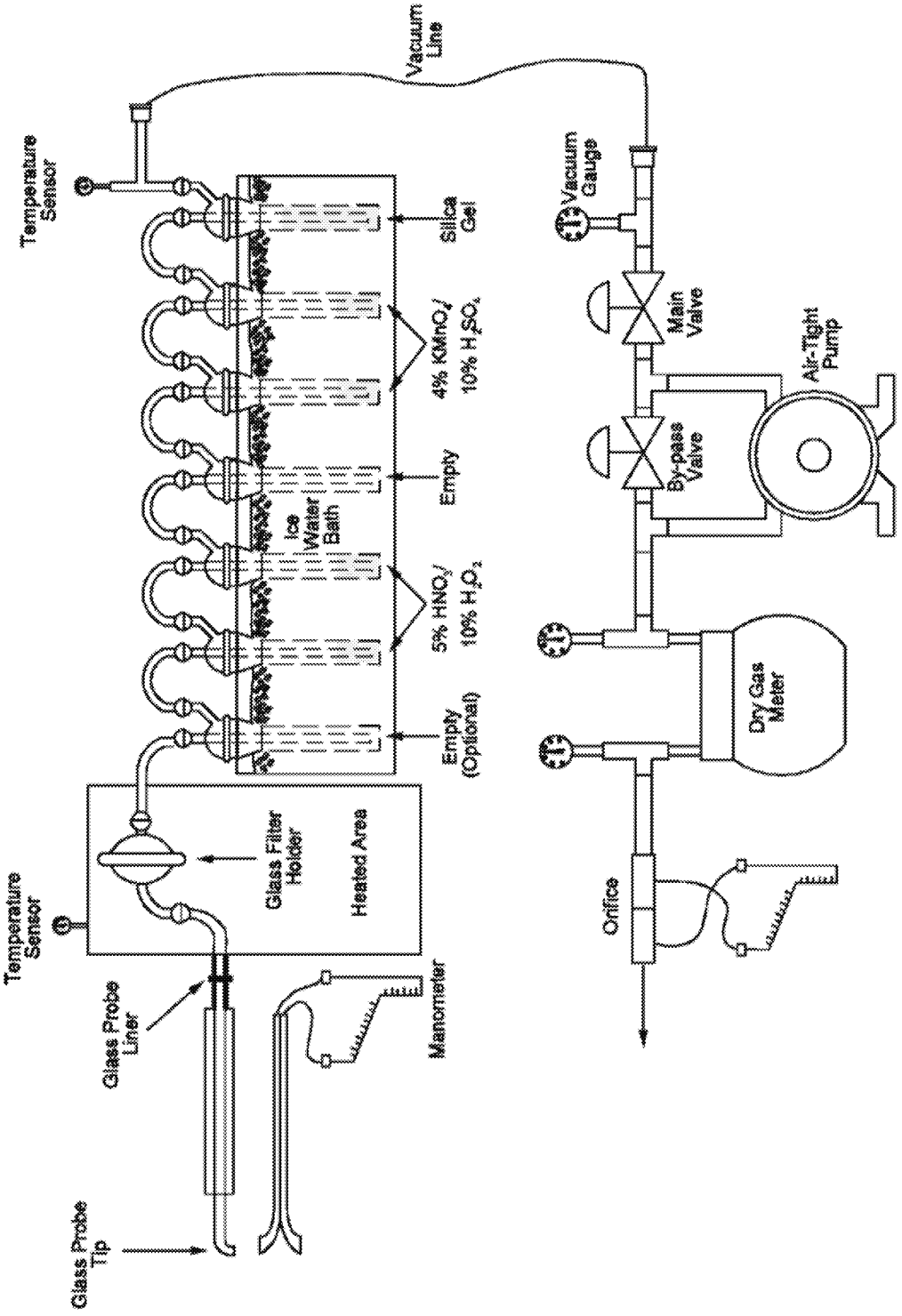
At the end of testing each day, all sampling equipment will be sealed and covered to protect from possible contamination and weather damage.

FIGURE 3-1
USEPA METHODS 5 AND 26A SAMPLING TRAIN



Note: If high HCl concentrations are expected, an additional empty impinger may be added between the acid and alkaline impingers.

FIGURE 3-2
USEPA METHOD 29 SAMPLING TRAIN



Note: If mercury is not an analyte, the fourth through sixth impingers are not required.

FIGURE 3-3
SW-846 METHOD 0023A SAMPLING TRAIN

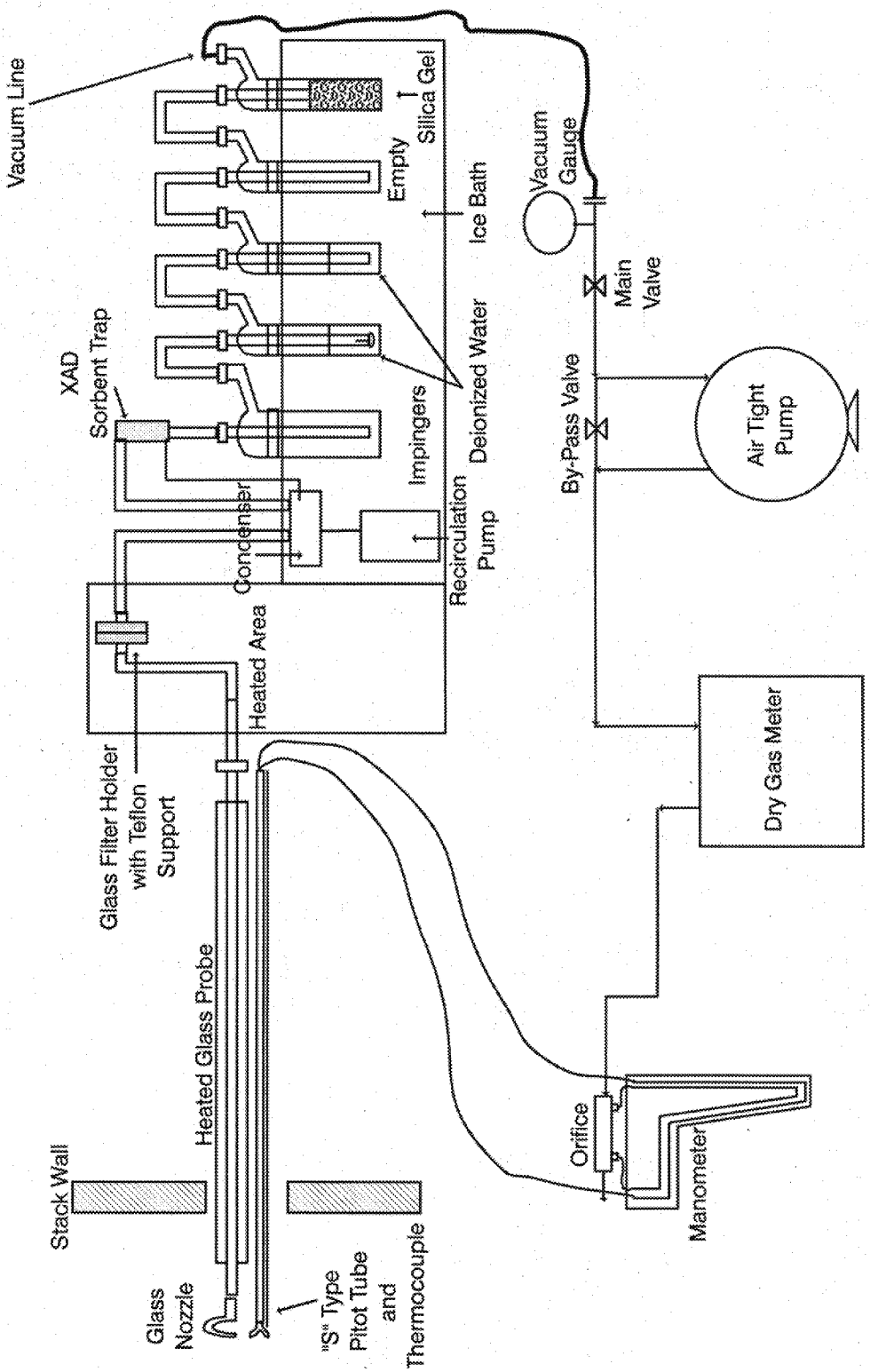
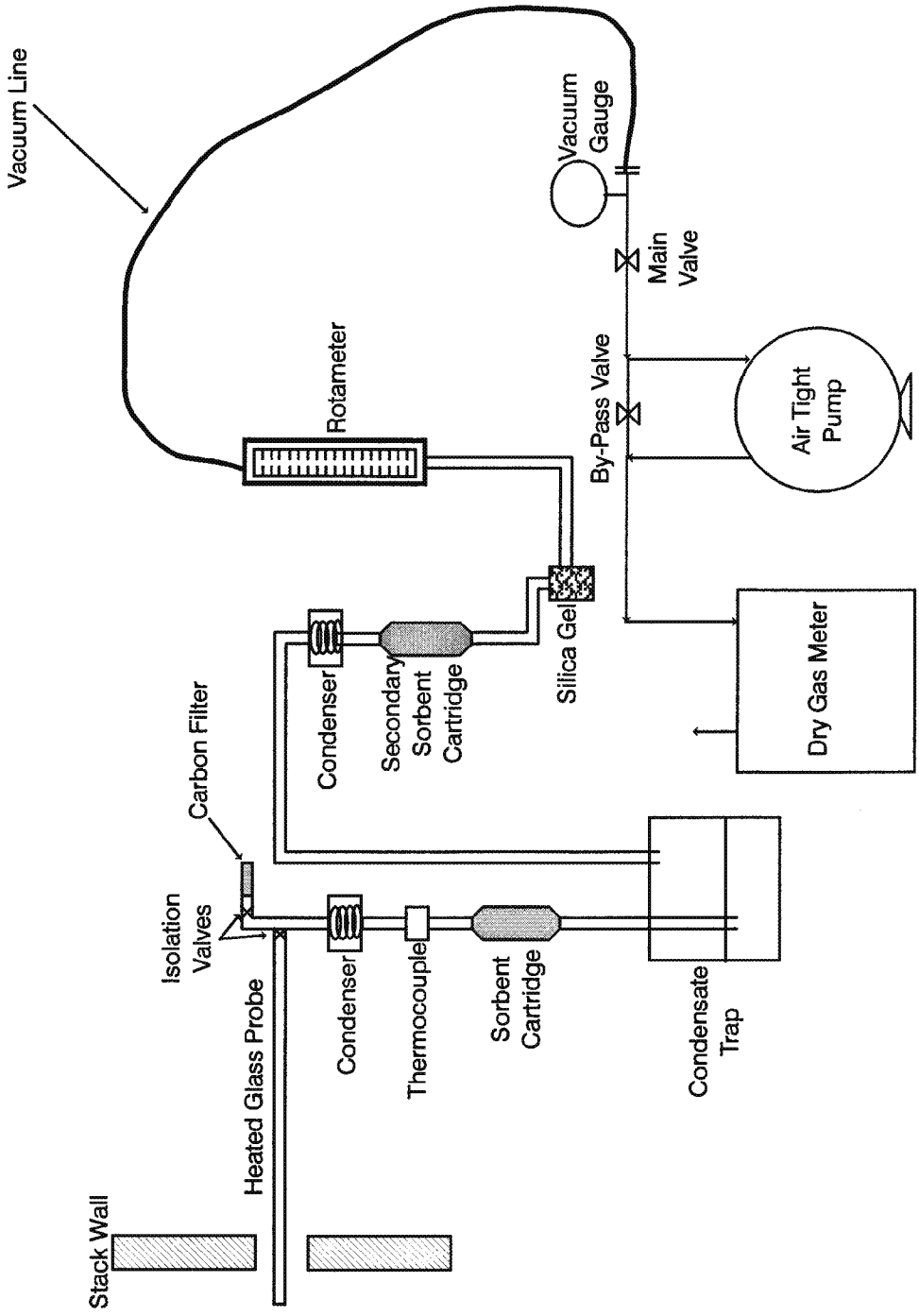


FIGURE 3-4
SW-846 METHOD 0030 SAMPLING TRAIN



4.0 SAMPLE HANDLING AND DOCUMENTATION

Sample custody procedures for this program are based on procedures from *Handbook: QA/QC Procedures for Hazardous Waste Incineration* (QA/QC Handbook) and SW-846, Chapter One. The procedures that will be used are discussed below.

4.1 FIELD SAMPLING OPERATIONS

The stack sampling contractor will be responsible for ensuring that custody and sample tracking documentation procedures are followed for the field sampling and field analytical efforts. Documentation of all sample collection activities will be recorded on pre-printed data collection forms. Table 4-1 provides a summary of sample custody documentation requirements.

TABLE 4-1
SAMPLE CUSTODY DOCUMENTATION REQUIREMENTS

CUSTODY DOCUMENT	REQUIRED INFORMATION
Sample identification log	List of all samples taken
	Time and date of sampling
	Description of sample
	Unique identifier for each sample
Sample data forms	Sampler's name
	Date and time of sample collection
	Sampling technique
	Compositing technique (waste samples)
	Sample identifier
	Sampling location
Chain of custody	Identifier of every sample shipped
	Sample preservation requirements
	Analysis and preparation procedures requested
	Signature of individual relinquishing sample custody

Samples will be collected, transported, and stored in clean containers that are constructed of materials inert to the analytical matrix, such as glass jars. Only containers that allow airtight seals will be used. Amber glass will be employed when specified by the method. All waste feed samples that are collected will be packed by the stack sampling contractor for transfer or shipment to the appropriate laboratories. Sample tracking and custody forms, which include sample identification and analysis requests, will be enclosed in the sample shipment container.

Upon receipt by the laboratory, information pertaining to the samples will be recorded on the sample tracking and custody form or an attachment to the form. The laboratory will note the overall condition of the samples, including the temperature of the samples upon receipt. The laboratory will also note any discrepancy in the sample identification between the sample labels and the custody forms. The signature of the person receiving the samples will be provided on the chain of custody (COC).

Every record pertaining to sample collection activities, including, but not limited to, stack sampling data sheets, process sample data sheets, sample tracking forms, sample identification log, sampling equipment calibration forms, balance calibration forms, and reagent preparation will be submitted with the report to provide evidence that the samples were handled properly, taken at the correct time and in the correct manner, assigned a unique identifier, received intact by the laboratory, and preserved as appropriate. Adherence to the holding times indicated in Section 5, Tables 5-1 and 5-2, will be noted in the laboratory analytical results.

4.2 FIELD LABORATORY OPERATIONS

The stack sampling contractor will provide an onsite laboratory trailer for sample train assembly and recovery and documentation and recordkeeping activities. Sample tracking documentation, shipping records, reagent and standards traceability, and all sampling activity records will be maintained in the laboratory trailer.

Documentation of onsite analytical activities, such as calibration, standards traceability, sample preparation steps, and raw measurement results will also be maintained onsite.

5.0 ANALYTICAL PROCEDURES

The analytical methods to be used during this test effort are detailed in Tables 5-1 and 5-2. Table 5-1 presents the analytical methods for waste samples. Table 5-2 presents the analytical methods for stack gas samples. These tables present the referenced analytical method, the laboratory performing the analysis, the extraction and analysis holding time, and if required, the sample preservation and sample preparation method. Collection of these samples was described in Section 3. Note that the tables in Section 3 specified which samples are to be collected using which methods; the tables included in this section specify the preparation and analytical methods to be used to evaluate each sample.

TABLE 5-1
SAMPLE PREPARATION AND ANALYSIS PROCEDURES FOR WASTE SAMPLES

PARAMETER	ANALYTICAL METHOD [1,2]	PRESERVATIVE REQUIRED	EXTRACTION HOLDING TIME (DAYS)	ANALYSIS HOLDING TIME (DAYS)	PREPARATION METHOD [1,2]
Arsenic, beryllium, cadmium, chromium, and lead	SW-846 Method 6010C	NA [3]	NA	180	SW-846 Method 3010A
Mercury	SW-846 Method 7470A or 7471B	Ice	NA	28	NA
Chlorine	SW-846 Method 9056	NA	NA	28	SW-846 Method 5050
Chlorobenzene	SW-846 Method 8260B	Ice	NA	14	SW-846 Method 5030B

[1] SW-846 refers to *Test Methods for Evaluating Solid Waste, Third Edition*.
[2] All methods will be performed in accordance with the laboratory's LELAP-approved SOP.
[3] NA indicates not applicable.

TABLE 5-2
SAMPLE PREPARATION AND ANALYSIS PROCEDURES FOR STACK GAS SAMPLES

PARAMETER	ANALYTICAL METHOD [1,2]	PRESERVATIVE REQUIRED	EXTRACTION HOLDING TIME (DAYS)	ANALYSIS HOLDING TIME (DAYS)	PREPARATION METHOD [1,2]
Molecular weight	USEPA Method 3A	NA [3]	NA	NA	NA
Moisture	USEPA Method 4	NA	NA	NA	NA
Particulate matter	USEPA Method 5	NA	NA	180	NA
Hydrogen chloride and chlorine	USEPA Method 26A	NA	NA	28	NA
Arsenic, beryllium, cadmium, chromium, and lead	SW-846 Method 6010C	NA	NA	180	USEPA Method 29
Mercury	SW-846 Method 7470A	NA	NA	28	USEPA Method 29
Dioxins and furans	SW-846 Methods 0023A and 8290A [4]	≤6°F in the dark	30	45 following extraction	SW-846 Methods 0023A and 8290A [4]
Benzene	SW-846 Method 8260B	Ice	NA	14	SW-846 Method 5041A
Carbon monoxide and oxygen	Facility CEMS	NA	NA	NA	NA

[1] SW-846 refers to *Test Methods for Evaluating Solid Waste, Third Edition*. USEPA Method refers to New Source Performance Standards, Test Methods and Procedures, Appendix A, 40 CFR Part 60.

[2] All methods will be performed in accordance with the laboratory's LELAP-approved SOP.

[3] NA indicates not applicable.

[4] Methods will be performed in accordance with the LELAP-approved SOP KNOX-ID-0004.

6.0 DATA QUALITY OBJECTIVES

The purpose of this test program is to demonstrate compliance with the performance standards of Condition V.G.10 of the permit. CWM is committed to ensuring that the data generated during this project are scientifically valid, defensible, complete, and of known precision and accuracy. These objectives can be best achieved by applying the requirements of USEPA accepted methodology as well as the more specific recommendations and guidelines for test burns. To ensure the consistency and adequacy of plans, reports, and overall data quality, guidance from Chapter One of SW-846 and the QA/QC Handbook has been integrated into the approaches and philosophies of this QAPP.

Key measures of performance include the objectives for precision, accuracy, representativeness, completeness, and comparability (commonly referred to as PARCC parameters). This section presents project-specific data quality objectives for this CPT. These objectives represent the level of data quality that would be considered acceptable for valid decision making, as measured in a manner that best reflects performance in the actual project matrices. These objectives will be communicated to the entire project team, including onsite sampling personnel and offsite contract laboratories.

6.1 QUALITY CONTROL PARAMETERS

QC objectives include precision, accuracy, representativeness, comparability, and completeness. Typical QC parameters include matrix spike (MS) and MS duplicate (MSD) samples, laboratory control sample (LCS) and LCS duplicate (LCSD) samples, surrogates, standards, spikes, and duplicates. Tables 6-1 and 6-2 provide the project specific QC procedures for assessing accuracy and precision for critical measurement parameters. Critical parameters are those that directly relate to the demonstration of regulatory compliance. These tables list the parameter of analysis, the QC parameter, the QC procedure, the frequency at which accuracy and precision are determined, and the objective.

TABLE 6-1
QUALITY CONTROL OBJECTIVES FOR WASTE SAMPLES

ANALYTICAL PARAMETERS	QC PARAMETER	QC PROCEDURE	FREQUENCY [1]	OBJECTIVE [1]
Arsenic, beryllium, cadmium, chromium, and lead	Precision	Field duplicate	One per test program	≤25% relative percent difference [2]
	Precision	Matrix spike duplicate	One per analytical batch	≤20% relative percent difference [2]
	Accuracy	Laboratory control sample	One per analytical batch	80-120% recovery
	Accuracy	Matrix spike	Two per analytical batch	75-125% recovery
Mercury	Precision	Field duplicate	One per test program	≤25% relative percent difference [2]
	Precision	Matrix spike duplicate	One per analytical batch	≤20% relative percent difference [2]
	Accuracy	Laboratory control sample	One per analytical batch	90-110% recovery
	Accuracy	Matrix spike	Two per analytical batch	85-115% recovery
Chlorine	Precision	Field duplicate	One per test program	≤20% relative percent difference [2]
		Sample duplicate	One per analytical batch	≤10% relative percent difference [2]
		Matrix spike duplicate	One per analytical batch	≤10% relative percent difference [2]
	Accuracy	Laboratory control sample	One per analytical batch	80-120% recovery
		Matrix spikes	Two per analytical batch	80-120% recovery
Chlorobenzene	Precision	Field duplicate	One per test program	≤20% relative percent difference [2]
	Precision	Matrix spike duplicate [3]	One per condition	≤24% relative percent difference [2]
	Precision	Surrogates	One per condition	≤35% relative standard deviation of recovery
	Accuracy	Matrix spike [3]	Two per condition	54-145% recovery
	Accuracy	Surrogates	Every sample	75-137% recovery for toluene-d8

[1] Unless specified otherwise, the frequency and objective provided for each parameter are based on specifications in the analytical method.

[2] If the concentrations are less than five times the reporting limit, the laboratory will be unable to control these limits.

[3] Matrix spikes are not applicable on samples with greater than 0.1% of the target analyte.

TABLE 6-2
QUALITY CONTROL OBJECTIVES FOR STACK GAS SAMPLES

ANALYTICAL PARAMETERS	QC PARAMETER	QC PROCEDURE	FREQUENCY [1]	OBJECTIVE [1]
Particulate matter	Precision	Sample duplicate	Every sample	≤0.5 mg difference
Hydrogen chloride and chlorine	Accuracy	Laboratory control sample	One per analytical batch	80-120% recovery
	Accuracy	Matrix spike	One per analytical batch	90-110% recovery
	Precision	Matrix spike duplicate	One per analytical batch	≤25% relative percent difference
	Precision	Duplicate injections	Every sample	≤5% difference from mean
Arsenic, beryllium, cadmium, chromium, and lead	Accuracy	Laboratory control sample	One per analytical batch	80-120% recovery
	Accuracy	Post digestion spike	One per analytical sequence	75-125% recovery
	Precision	Laboratory control sample duplicate	One per analytical batch	≤25% relative percent difference
Mercury	Accuracy	Laboratory control sample	One per analytical batch	80-120% recovery
	Accuracy	Matrix spike	One per back-half analytical batch	75-125% recovery
	Accuracy	Post digestion spike	One front-half sample	75-125% recovery
	Precision	Matrix spike duplicate	One per back-half analytical batch	≤25% relative percent difference
Dioxins and furans	Precision	Laboratory control sample duplicate	One per analytical batch	≤50% relative percent difference
	Accuracy	Extraction standards	Every sample	40-135% recovery
	Accuracy	Sampling standards	Every back-half sample	70-130% recovery
	Accuracy	Laboratory control samples	Two per analytical batch	70-130% recovery

TABLE 6-2 (CONTINUED)
QUALITY CONTROL OBJECTIVES FOR STACK GAS SAMPLES

ANALYTICAL PARAMETERS	QC PARAMETER	QC PROCEDURE	FREQUENCY [1]	OBJECTIVE [1]
Chlorobenzene	Precision	Laboratory control sample duplicate	One per analytical batch	Sorbent: ≤26% relative percent difference Condensate: ≤20% relative percent difference
	Accuracy	Surrogates	Every sample	Sorbent: 57-134% recovery for toluene-d8 Condensate: 79-120% recovery for toluene-d8
	Accuracy	Laboratory control sample	Two per analytical batch	Sorbent: 65-120% recovery Condensate: 77-120% recovery

[1] Unless specified otherwise, the frequency and objective provided for each parameter are based on specifications in the analytical method.

6.1.1 PRECISION

Precision is a measure of the reproducibility of results under a given set of conditions. It is expressed in terms of the distribution, or scatter, of replicate measurement results, calculated as the relative standard deviation (RSD) or, for duplicates, as relative percent difference (RPD). RPD and RSD values are calculated using the following equations:

$$RPD = \left(\frac{|X_1 - X_2|}{\text{avg } X} \right) \text{x } 100$$

$$RSD = \left(\frac{STDEV}{\text{avg } X} \right) \text{x } 100$$

Where X_1 and X_2 represent each of the duplicate results.

6.1.2 ACCURACY

Accuracy is a measure of the difference between an analysis result and the "true" value. Accuracy is expressed in terms of percent recovery (*e.g.*, for surrogates, spikes, and reference material). Percent recovery for spiked samples, such as MS samples, is calculated using the following equation:

$$\%\,Recovery = \left(\frac{SSR - SR}{SA} \right) \text{x } 100$$

Where:

SSR = Spiked sample result

SR = Sample result

SA = Spike added

Percent recovery for other QC parameters, such as LCS, surrogates, and standards, is calculated using the following equation:

$$\%\ \text{Recovery} = \left(\frac{\text{Measured Value}}{\text{True Value}} \right) \text{x } 100$$

6.1.3 REPRESENTATIVENESS

Representativeness is defined as the degree to which data accurately and precisely represent a characteristic of a population, a parameter variations at a sampling point, a process condition, or an environmental condition. An appropriate sampling strategy that addresses collection of representative samples in time and space is crucial to subsequent decision-making and defensibility of the data. There are no numerical objectives for representativeness. The selection of suitable locations and sampling strategies, as described in this QAPP, and adherence to sample collection protocols are the bases for ensuring representativeness.

6.1.4 COMPARABILITY

Comparability is defined as expressing the confidence with which one data set can be compared to another. There are no numerical objectives for comparability. A representative sample whose results are comparable to other data sets is ensured primarily through the use of standard reference sampling and analytical methods. Reported in common units, the results generated should thus be comparable to those obtained from other emissions tests and allow for consistent decision-making.

6.1.5 COMPLETENESS

Completeness is defined as "the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under optimal normal conditions." Completeness can be defined quantitatively using the following equation:

$$\%\ \text{Completeness} = \left(\frac{\text{No. of Valid Data}}{\text{No. of Data Planned}} \right) \text{x } 100$$

In the overall project context, the target is 100 percent completeness, which for a valid test condition is defined as consisting of three valid test runs. A valid test run is one in which sufficient valid data are presented to make any necessary demonstrations and to enable the permit writer/reviewer to write appropriate permit conditions or to be confident about demonstration of compliance with a current permit or regulation.

A run can be valid even though the completeness objective of 100 percent for the data package is not achieved. Given the possibility of human error (and other unpredictable problems) and the inability of collecting additional samples after a test is completed, the impact of achieving less than 100 percent completeness must be assessed in the specific situation, rather than arbitrarily rejecting all the useable scientific information for the run without such consideration. For example, satisfying the completeness objective for a single piece of analytical data includes providing documentation that proves the following:

- An acceptable number of sub-samples were collected and composited;
- Compositing procedures were followed;
- The sample collection log was completed;
- Shipping documents and laboratory instructions were prepared and followed;
- The correct analytical procedures were followed;
- Any necessary modifications to methodology were documented and justified;
- Approved laboratory records were complete;
- Proper data reduction procedures were followed; and
- Analytical instrument printouts were included.

Clearly, the failure of a sampler to note the time a sub-sample was taken (where the previous and following sample times are noted) has less impact on the validity and acceptability of a data package than a failure by the laboratory to demonstrate that the analytical instrument was properly calibrated.

Any errors or omissions in a data package will be identified and accompanied by a discussion of the potential impact on the validity of the data package, the conclusions of the report, and the demonstration of performance standards for the consideration and approval of the LDEQ.

6.2 Evaluation of Contamination Effects

Various blanks will be collected throughout the test program to evaluate the effects of contamination on results. Field blanks will be collected during the test program as required by the respective method. Blank samples of all reagents used in the stack sampling program will also be collected. Method blanks will be prepared and analyzed by the respective laboratories to evaluate the cleanliness of sample handling and preparation and overall laboratory practices. Since field and reagent blanks cannot be collected for waste samples, the laboratory method blank will be used to determine the effects of contamination for waste analyses.

Table 6-3 provides the type and acceptance criteria for each stack gas blank to be analyzed. These blanks, as well as the laboratory method blanks for the waste samples, provide critical information on the potential contamination that may occur in test program samples. The results of blank analyses can

prove very useful when attempting to understand anomalies in data, or generally higher than expected test results.

TABLE 6-3
BLANK ANALYSIS OBJECTIVES FOR STACK GAS SAMPLES

ANALYTICAL PARAMETERS	BLANK TYPE	FREQUENCY	OBJECTIVE
Particulate matter	Reagent blank	One per test program	<0.001 percent
Hydrogen chloride and chlorine	Method blank	One per analytical batch	<Reporting limit
	Reagent blanks	One per test program	<Reporting limit
Arsenic, beryllium, cadmium, chromium, lead, and mercury	Initial calibration blank	Following initial calibration verification	<Reporting limit
	Continuing calibration blank	Following continuing calibration verification	<Reporting limit
	Method blank	One per batch	<Reporting limit
	Reagent blanks	One set per test program	<Reporting limit
Dioxins and furans	Field blank	One per test program	<Reporting limit
	Method blank	One per analytical batch	<Reporting limit
	Reagent blanks	One set per test program	Archived [1]
Chlorobenzene	Field blank	One per condition	<Reporting limit
	Trip blank	One per shipment	Archived [1]
	Method blank	One per analytical batch	<Reporting limit
	Reagent blanks	One set per test program	Archived [1]

[1] The specified reagent blanks will initially be archived. These blanks will only be analyzed if the field blank indicates possible sample contamination. Possible contamination will be assessed using the objectives for field blanks stated in this table.

6.3 PERFORMANCE AUDITS

On September 13, 2010, the USEPA issued a final rule to restructure the stationary source audit program. The program requires that audit samples be analyzed along with the samples collected while testing for regulatory compliance. This analysis helps the regulatory agency determine the validity of compliance test results. The rule requires sources to obtain and use audit samples from accredited providers. The USEPA has approved the National Environmental Laboratory Accreditation Conference (NELAC) Institute (TNI) Stationary Source Audit Program to provide accredited audit samples.

Audit samples are currently available for USEPA Method 26A (HCl only) and USEPA Method 29. CWM will obtain the required audit samples prior to the CPT. Audit samples will only be obtained if the expected concentration is within the Stationary Source Audit Sample (SSAS) Table certified concentration range (http://www.nelac-institute.org/ssas/).

6.4 Corrective Action

During any testing project, simple or complex, there is potential that deviations from data quality objectives may occur. This section gives corrective action procedures to be used to mitigate such problems.

6.4.1 Equipment Failure

Any equipment found to be out of calibration or operating improperly will be repaired or replaced before additional measurements are made. If equipment repair is made onsite, calibrations will be performed in accordance with the applicable methods prior to use. It may be necessary to transport equipment offsite for calibration. If calibrations cannot be performed, the equipment will not be used. If measurements are made with equipment subsequently found to be out of calibration or operating improperly, a detailed explanation of the cause of the malfunction will be provided. The effect of the malfunction on the data will be assessed, and the data will be qualified.

6.4.2 Analytical Deviations

For analyses where a method QC check sample, such as a method blank, does not meet method specifications, the problem will be investigated to determine the cause as well as any corrective action that should be taken. Once the corrective action has been taken, the analysis will be re-examined to verify that the problem has been eliminated.

In instances of out of specification spikes or calibrations, the samples involved will be re-extracted or reanalyzed if possible. In those instances where reanalyzing the sample is not possible, corrective measures will be taken to improve method performance prior to analysis of the next batch of samples.

Results for samples where matrix interferences preclude meeting objectives for recoveries of surrogates or spikes will be evaluated for potential bias to calculated emission results.

6.4.3 Contamination

The handling procedures samples taken during this test project, from blank testing to sample collection and analysis, are designed to eliminate contamination by limiting their exposure to contaminants in the ambient air and other outside sources. If levels of contamination are present above the reporting limits in the analyzed blanks, the archived blank samples will be analyzed. Corrective action will be taken if the results of the field blanks are significantly different from those of the reagent blanks or trip blanks. This comparison will indicate whether high levels in the field blank are due to contamination from exposure to outside sources, contamination of reagent materials, or, in the case of resin traps, from degradation of the traps.

6.4.4 Procedural Deviations

SOPs for the methods being performed will be available onsite during all testing. CWM and the project team will determine an appropriate action in all cases where standard procedures cannot resolve the problem. The action will be implemented after approval from the representatives of the LDEQ.

7.0 CALIBRATION PROCEDURES AND PREVENTATIVE MAINTENANCE

This section presents a brief discussion of calibration and routine maintenance procedures to be used for sampling and analytical equipment. Criteria for analytical calibrations are also included. Calibration procedures for each analytical method are discussed in detail within the methods.

7.1 SAMPLING EQUIPMENT

All sampling equipment will be provided by the stack sampling contractor. The equipment will be calibrated prior to arrival onsite and after all testing has been completed. The sampling equipment calibration requirements and acceptance limits are listed in Table 7-1.

The equipment will be calibrated according to the criteria specified in the reference method being employed. In addition, the stack sampling contractor will follow the guidelines set forth in the *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods*. When these methods are inapplicable, methods such as those prescribed by the ASTM International (ASTM) will be used. Dry gas meters, orifices, nozzles, and pitot tubes are calibrated in accordance with these documents. The range of the calibration is specified for all environmental measurements to encompass the range of probable experimental values. This approach ensures that all results are based upon interpolative analyses rather than extrapolative analyses. Calibrations are designed to include, where practical, at least four measurement points evenly spaced over the range. This practice minimizes the probability that false assumptions of calibration linearity will be made. In addition, it is common practice to select, when practical, at least one calibration value that approximates the levels anticipated in the actual measurement.

Data obtained during calibrations are recorded on standardized forms, which are checked for completeness and accuracy. Data reduction and subsequent calculations are performed using computer software. Calculations are checked at least twice for accuracy. Copies of calibration forms will be included in the test or project reports.

TABLE 7-1
SAMPLING EQUIPMENT CALIBRATION REQUIREMENTS

STACK GAS PARAMETER	QUALITY PARAMETER	METHOD OF DETERMINATION	FREQUENCY	CRITERIA
Gas flow	Pitot tube angle and dimensions	Measurements with a vernier micrometer and angle indicator	Pre-test and post-test	To specifications in USEPA Method 2
	Barometer	Calibrated vs. National Weather Service station	Pre-test and post-test	Within 0.1 inches mercury
	Stack gas thermocouple	Calibrated vs. ASTM mercury-in-glass thermometer	Pre-test and post-test	Within 1.5% as °R
Isokinetic sampling trains	Dry gas meter	Calibrated against a reference wet test meter	Pre-test and post-test	1. Y within 0.05 of pre-test Y 2. H@ within 0.15 of pre-test
	Probe nozzle [1]	Measurements with a vernier micrometer to 0.001 inches	Pre-test	Maximum difference in any two dimensions within 0.004 inches
	Dry gas meter thermocouples	Calibrated vs. ASTM mercury-in-glass thermometer	Pre-test and post-test	Within 1.5% as °R
	Trip balance	Calibrated vs. standard weights	Pre-test	Within 0.5 grams
Non-isokinetic sampling trains	Dry gas meter	Calibrated against a reference wet test meter	Pre-test and post-test	1. Y within 0.05 of pre-test Y 2. H@ within 0.15 of pre-test
	Dry gas meter thermocouples	Calibrated vs. ASTM mercury-in-glass thermometer	Pre-test and post-test	Within 1.5% as °R
Carbon dioxide and oxygen analyzers	Analyzer calibration error test	Checked using USEPA Protocol 1 calibration gases	Before the test run and after any failed system bias or drift check	±2% of calibration span
	System bias test	Checked using USEPA Protocol 1 calibration gases	Before and after each test run	±5% of calibration span
	System drift check	Checked using USEPA Protocol 1 calibration gases	After the post-test system bias test	±3% of calibration span
Carbon monoxide analyzer (Facility CEMS)	Calibration drift check	Checked using calibration gases	Daily	±3% of calibration span
Oxygen analyzer (Facility CEMS)	Calibration drift check	Checked using calibration gases	Daily	±0.5% volume

[1] Glass or Quartz nozzles will be used, and the calibration cannot change.

7.1.1 Pitot Tubes

Each pitot tube is inspected in accordance with the geometry standards contained in USEPA Method 2. A calibration coefficient is calculated for each pitot tube.

7.1.2 Differential Pressure Gauges

Fluid manometers do not require calibration other than leak checks. Manometers are leak-checked in the field prior to each test series and again upon completion of testing.

7.1.3 Digital Temperature Indicator

One digital temperature indicator is used to determine the flue gas temperature, probe temperature, oven temperature, impinger outlet temperature, and dry gas meter temperature. The digital temperature indicator is calibrated over a seven-point range (32 to 375°F) using an ASTM mercury-in-glass thermometer as a reference. The calibration is acceptable if the agreement is within ±1.5 percent in degrees Rankine (°R) in the temperature range of 492 to 654°R (32 to 194°F).

7.1.4 Dry Gas Meter and Orifice

A calibrated wet test meter is used as a reference meter to fully calibrate the dry gas meter and orifice. For the orifice, an orifice calibration factor is calculated for each of the 18 flow settings. For the dry gas meter, the full calibration provides the calibration factor of the dry gas meter.

7.1.5 Barometer

The stack sampling contractor personnel will calibrate the barometer prior to arrival onsite against a National Weather Service station.

7.1.6 Nozzle

Glass nozzles will be calibrated onsite using a micrometer. Eight readings will be taken at quarter turns, followed by two measurements at random. The arithmetic average of the values obtained during the calibration is used.

7.1.7 Continuous Emissions Monitors

The stack sampling contractor will supply CEMS to measure the concentrations of carbon dioxide and oxygen in the stack gas. The monitors will be calibrated according to the procedures outlined in the respective test methods.

The facility's CEMS will be used to measure the concentrations of CO and oxygen in the stack gas. A calibration drift check is performed daily as required by 40 CFR Part 266 Appendix IX.

7.2 Analytical Equipment

Analytical equipment calibration and QC procedures and internal QC checks are included to ensure accuracy of the measurements made by laboratory equipment. Table 7-2 provides a summary of the calibration and QC checks included for each analytical method for this test program.

Table 7-2
Summary of Analytical Equipment Calibration and Quality Control Checks

Parameter	Quality Control Check	Method of Determination	Frequency	Acceptance Criteria
Particulate matter	Calibration check	Class S weights	Daily	≤0.5 milligrams
Hydrogen chloride and chlorine	Initial calibration	Four levels	Initially and as needed	$r \geq 0.995$
	Continuing accuracy check	Instrument calibration verification	Following initial calibration	±10% difference
	Continuing calibration	Midpoint standard	Every 10 samples	±10% difference
Arsenic, beryllium, cadmium, chromium, and lead	Initial calibration	Calibration blank with at least one standard	Daily before analysis	Analysis of second calibration standard ±10 % difference
	Calibration check	Instrument calibration verification	Following initial calibration	±10% difference with relative standard deviation <5% from replicate (minimum of two) integrations
	Serial dilution	Five-fold dilution of sample digestate	1 per batch	For samples >50x instrument detection limit, dilutions must agree within 10%
	Interference check	Interference check sample A/AB analysis	Beginning of sequence	1. <2x reporting limit for applicable analytes 2. Recovery ±20% (as applicable)
	Continuing calibration	Continuing calibration verification	Every 10 samples and at the end of the sequence	±10% difference with relative standard deviation <5% from replicate (minimum of two) integrations
Mercury	Initial calibration	Calibration blank and five standards	Daily before analysis	$r \geq 0.995$
	Calibration check	Instrument calibration verification	Following initial calibration	±10% difference
	Continuing calibration	Continuing calibration verification	Every 10 samples and at the end of the sequence	±20% difference

TABLE 7-2 (CONTINUED)
SUMMARY OF ANALYTICAL EQUIPMENT CALIBRATION AND QUALITY CONTROL CHECKS

PARAMETER	QUALITY CONTROL CHECK	METHOD OF DETERMINATION	FREQUENCY	ACCEPTANCE CRITERIA
Dioxins and furans	Initial calibration	Five high resolution concentration calibration solutions	Prior to sample analysis	1. Mean relative response factor for unlabeled standards: <20% relative standard deviation 2. Mean relative response factor for labeled reference compounds: <30% relative standard deviation
	Calibration verification	Midlevel standard	At the beginning and end of each 12-hour shift	1. Response factors within ±20% of the initial calibration mean relative response factor for unlabeled standards in beginning standard 2. Response factors within ±25% of the initial calibration mean relative response factor for unlabeled standards in ending standard 3. Response factors within ±30% of the initial calibration mean relative response factor for labeled standards in beginning standard 4. Response factors within ±35% of the initial calibration mean relative response factor for unlabeled standards in ending standard
	Retention time window verification and gas chromatograph column performance	Monitor retention times, verify gas chromatograph column performance	At the beginning of each 12-hour shift	Compliance with Section 9.6.2 of SW-846 Method 8290A
Chlorobenzene	Initial calibration	Five levels, as per target list	Prior to sample analysis	1. Compounds with linear response factor, relative standard deviation of initial calibration ≤15% 2. Compounds with non-linear response factor, correlation coefficient or coefficient of determination ≥ 0.99 3. Relative response factors for system performance check compounds: ≥0.10 for chloromethane, 1,1-dichloroethane, and bromoform, ≥0.30 for 1,1,2,2-tetrachloroethane and chlorobenzene 4. Relative response factor of calibration check compounds: ±30% relative standard deviation

TABLE 7-2 (CONTINUED)
SUMMARY OF ANALYTICAL EQUIPMENT CALIBRATION AND QUALITY CONTROL CHECKS

PARAMETER	QUALITY CONTROL CHECK	METHOD OF DETERMINATION	FREQUENCY	ACCEPTANCE CRITERIA
Chlorobenzene	Continuing calibration	Continuing calibration verification	Every 12 hours following tune as required	1. Response factor for system performance check compounds: Same as initial calibration 2. Percent difference of calibration check compounds relative response factor from initial calibration: ≤20%
	Consistency in chromatography	Internal standards	Every sample and standard	1. Retention time relative to daily standard: ≤30 seconds 2. Area counts relative to daily standard: 50-200%

7.3 PREVENTATIVE MAINTENANCE

To ensure the quality and reliability of the data obtained, preventative maintenance is performed on the sampling and analytical equipment. The following sections outline those procedures.

7.3.1 SAMPLING EQUIPMENT

The potential impact of equipment malfunction on data completeness is minimized through two complimentary approaches. An in-house equipment maintenance program is part of routine operations. The maintenance program's strengths include:

- Availability of personnel experienced in the details of equipment maintenance and fabrication;
- Maintenance of an adequate spare parts inventory; and
- Availability of tools and specialized equipment.

For field equipment, preventive maintenance schedules are developed from historical data. Table 7-3 gives specific maintenance procedures for field equipment. Maintenance schedules for major analytical instruments (*e.g.*, balances, gas chromatographs) are based on manufacturer's recommendations.

TABLE 7-3
MAINTENANCE ACTIVITIES FOR FIELD SAMPLING EQUIPMENT

EQUIPMENT	MAINTENANCE ACTIVITIES	SPARE PARTS
Vacuum system	Before and after field program: 1. Check oil and oiler jar 2. Leak check 3. Verify vacuum gauge is functional Yearly or as needed: 1. Replace valves in pump	Spare fluid
Inclined manometer	Before and after each field program: 1. Leak check 2. Check fluid for discoloration or visible matter Yearly or as needed: 1. Disassemble and clean 2. Replace fluid	Spare fluid, o-rings
Dry gas meter	Before and after each field program: 1. Check meter dial for erratic rotation Every 3 months: 1. Remove panels and check for excessive oil or corrosion 2. Disassemble and clean	None
Nozzles	Before and after each test: 1. Verify no dents, corrosion or other damage 2. Glass or quartz nozzles, check for chips and cracks	Spare nozzles
Diaphragm pump	Before and after each test: 1. Leak check, change diaphragm if needed	None
Miscellaneous	Check for availability of spare parts	Fuses, fittings, thermocouples, thermocouple wire, variable transformers.

7.3.2 ANALYTICAL EQUIPMENT

In addition to including QC checks in the analysis of test program samples, the laboratories also perform regular inspection and maintenance of the laboratory equipment. Table 7-4 lists some of the routine maintenance procedures associated with the analytical equipment to be used in this test program.

TABLE 7-4
MAINTENANCE ACTIVITIES FOR ANALYTICAL EQUIPMENT

PARAMETER	EQUIPMENT	MAINTENANCE PROCEDURES
Hydrogen chloride and chlorine	Ion chromatograph	– Check pump and gas pressure – Check all lines for crimping leaks and discoloration
Arsenic, beryllium, cadmium, chromium, and lead	Inductively coupled plasma	– Check gases, vacuum pump and cooling water, nebulizer, capillary tubing, peristaltic pump, high voltage switch, exhaust screens and torch, glassware and aerosol injector tube – Clean plasma torch, nebulizer, and filters – Replace pump tubing – Clean and lubricate sampler arm – Clean power unit and coolant water filters
Mercury	Atomic absorption analyzer	– Clean optic cell and tubing – Change stannous chloride and related tubing – Adjust/change mercury lamp
Dioxins and furans	High resolution gas chromatograph/high resolution mass spectroscopy	– Change rotary pump oil – Clean beam center/focus stack and outer source – Clean ion volume – Change source slit
Chlorobenzene	Gas chromatograph/ mass spectroscopy	– Redo tune – Replace filament(s)

8.0 DATA REDUCTION, VALIDATION AND REPORTING

This section presents the approaches to be used to reduce, validate, and report measurement data. With respect to the CPT, a quality team of companies and laboratories will be working together to ensure the success of this project. The team will make certain that:

- All raw data packages are paginated and assigned a unique project number. Each project number will reflect the type of analyses performed (*i.e.*, organic, inorganic, waste feed, air emissions).
- The data packages contain a case narrative, sample description information, sample receipt information, COC documentation, and summary report. All associated QA/QC results, run/batch data, instrument calibration data, sample extraction/preparation logs, and chromatograms, *etc.* will be included in the final laboratory report. The report will also contain a list of validation qualifiers.
- These data are assigned to a specific appendix in the report for easy reference and data review.

8.1 DATA REDUCTION

The methods referenced in this QAPP for field measurements and lab analyses are standard methods and are routinely used for such measurements and analysis. Data reduction procedures will follow the specific calculations presented in the reference methods.

Extreme care will be exercised to ensure hand recorded data are written accurately and legibly. Additionally, prepared and formatted data recording forms will be required for all data collection. This is an important aid to verify that all necessary data items are recorded. The collected field and laboratory data will be reviewed for correctness and completeness.

The stack sampling contractor will reduce and validate all of the sampling and field measurement data that are collected. The sampling data will include flow measurements, calibrations, *etc.* The laboratory will reduce all analytical results prior to submission. The analytical data will be used to determine concentrations and emission rates of the compounds of interest. The manner in which the derived quantities will be reported is discussed in Section 8.3.

8.2 DATA VALIDATION

Validation demonstrates that a process, item, data set, or service satisfies the requirements defined by the user. For this program, review and evaluation of documents and records will be performed to assess the validity of samples collected, methodologies used, and data reported. This review comprises three parts: review of field documentation, review of laboratory data reports, and evaluation of data quality. The Quality Assurance Officer has ultimate responsibility for validating all data for this project.

The sampling and analytical methods for this program have been selected because of their accepted validity for these types of applications. Adherence to the accepted methods, as described in this QAPP

and the laboratory's LELAP-approved SOPs, is the first criterion for validation. The effectiveness of the analytical methods as applied to this particular study will be evaluated based on project-specific quality indicators, such as audit samples, replicate samples, and matrix and surrogate spikes.

8.2.1 Review of Field Documentation

Sample validation is intended to ensure that the samples collected are representative of the population under study. Criteria for acceptance include positive identification, documentation of sample shipment, preservation, and storage, and documentation demonstrating adherence to sample collection protocols and QC checks. As part of the review of field documentation, field data sheets and master logbooks will be checked for completeness, correctness, and consistency.

8.2.2 Laboratory Review of Data

The representative from each laboratory will approve all data results. The representative's signature will be included in the report. This signature will indicate that all QA/QC expectations were met. If expectations were not met, the discrepancies will be explained in the laboratory case narrative. The laboratory representatives will discuss the QA/QC issues and include the impact of these issues on the data results in the case narrative.

Laboratory raw data packages will include the following information:

- A table of contents for the raw data; and
- Numbered pages, correlating to the table of contents.

8.2.3 Evaluation of Data Quality

The project team will review and evaluate the reported data. Data quality will be assessed. Review of the laboratory reports will result in an evaluation of the following parameters:

- Holding time for samples from date of collection to date of preparation and/or analysis;
- Sample storage conditions during the holding period prior to analysis;
- Tuning and calibration of instruments;
- PARCC parameter results and acceptance criteria;
- Blank sample analysis results; and
- Performance evaluation (audit) sample results, if applicable.

8.3 Data Reporting

The CPT report will be submitted to LDEQ within 90 days of completing the testing, or an extension will be requested. Both electronic and hard copies of the report will be provided.

All data will be reported in the appropriate units as applicable to the sample stream and the method of analysis. Waste feed analytical results will be reported as concentrations by weight. Emission results will be reported on a concentration basis to allow comparison to the emission standards.

Specific procedures will be followed when reporting test results. This section describes the conventions for detection limits, blank correction, and the use of significant figures.

8.3.1 Management of Non-Detects

There are several specific situations that will arise in which calculations will need to be performed, but the analytical results are non-detects (at some level). Contracted laboratories are requested to achieve the lowest detection limits possible for each of the methods included in this QAPP. All detection limits shall be defined in the laboratory reports. No data results shall be reported as "ND" without a defined numerical value provided as the detection limit.

The procedures for handling non-detects will be communicated to each laboratory and the stack sampling contractor. When dealing with detection limits and non-detect data, the following guidelines will be used:

- Reporting limits (RLs) or method detection limits (MDLs) will be used to report waste analytical data;
- RLs, MDLs, reliable detection limits (RDLs), or estimated detection limits (EDLs) will be used to report emissions analytical data, as appropriate;
- For D/F emissions results, the SW-846 Method 0023A train will be operated for a minimum of 180 minutes during each test run, and all non-detects will be assumed to be present at zero concentration, in accordance with 40 CFR § 63.1208(b)(1)(iii);
- For DRE calculations, a non-detect in waste feed will be treated as a zero, and a non-detect in the emissions will be treated as the RL (this will provide for the most conservative estimate of emission rates); and
- Any results that use non-detects will be reported as maxima (*i.e.*, with a less-than sign – "<").

8.3.2 Rounding and Significant Figures

Observational results will be made with as many significant figures as possible. Rounding will be deferred until all resultant calculations have been made. The following rules will be applied in rounding data:

- When the digit after the one to be rounded is less than five, the one to be rounded is left unchanged; and
- When the digit after the one to be rounded is greater than or equal to five, the one to be rounded is increased by one.

Intermediate results will be presented in the final report at an appropriate level of significance (*i.e.*, rounded), although the derived, or resultant, calculations will be based on unrounded intermediate data. Consequently, it may not be possible to precisely reconstruct the resultant calculations on any particular table from the rounded intermediate results due to rounding errors.

9.0 QUALITY ASSURANCE REPORTS

Activities affecting data quality will be reviewed by the project team daily in the field, and as appropriate during non-field efforts. This will allow assessment of the overall effectiveness of the QAPP. These reviews will include the following:

- Summary of key QA activities, stressing measures that are being taken to ensure adherence to the QAPP;
- Description of problems observed that may impact data quality and corrective actions taken;
- Status of sample shipment and integrity at time of receipt and progress of sample analysis;
- Assessment of the QC data gathered over that time period;
- Any changes in QA organizational activities and personnel; and
- Results of internal or external assessments and the plan for correcting identified deficiencies, if any.

The testing program will have multiple tiers of QA/QC reviews. The specific laboratory performing the analysis will review the data for which they are responsible, and the laboratory project manager will sign the analytical data reports. Any QA/QC anomalies will be discussed in the case narrative. The Project Coordinator and Quality Assurance Officer will also review the laboratory data package to discuss how the QA/QC anomalies may impact the emissions calculations. Any data that is determined to be invalid will be stated in the final report, and the impact of the invalid data on the test program will be assessed. Through this multiple tier process, all stages of the testing program will be tracked, monitored, reviewed, and documented.

10.0 REFERENCES

ASTM. *Annual Book of ASTM Standards*, latest annual edition.

USEPA. November 1986 and updates. *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods*. USEPA 530/ SW-846.

USEPA. 1994. *Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods*. Office of Research and Development. EPA/600/R-94/038C.

USEPA. February 1991. *Preparation Aids for the Development of Category I Quality Assurance Project Plan*. Office of Research and Development. EPA/600/8-91/003.

USEPA. 1990. *Handbook: QA/QC Procedures for Hazardous Waste Incineration*. Office of Research and Development. EPA/625/6-89/023.

USEPA. *Methods Manual for Compliance With the BIF Regulations*, Appendix IX, 40 CFR Part 266.

USEPA. National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors, 40 CFR Part 63, Subpart EEE, September 30, 1999, and as amended through October 28, 2008.

USEPA. New Source Performance Standards, Test Methods and Procedures, Appendix A, 40 CFR Part 60.

Attachment A:
PROJECT TEAM CONTACT INFORMATION

Performance Test Manager	Ben Dabadie Chemical Waste Management, Inc. Lake Charles Facility 7170 John Brannon Road Sulphur, LA 70665 337-583-3676 bdabadie@wm.com
Project Coordinator	S. Heather McHale, P.E. Coterie Environmental LLC 1150 First Ave, Suite 501 King of Prussia, PA 19406 610-406-2214 heather.mchale@coterie-env.com
Stack Test Director	To be determined
Waste Spiking Director	To be determined
Quality Assurance Officer	Meghan Skemp Coterie Environmental LLC 1150 First Ave, Suite 501 King of Prussia, PA 19406 281-201-7818 meghan.skemp@coterie-env.com
Laboratory	To be determined

Attachment B:
PROJECT TEAM RESUMES

BENJAMIN C. DABADIE

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SUMMARY

Currently employed by Waste Management as an Environmental Protection Manager at the Chemical Waste Management – Lake Charles Facility. Have served in multiple capacities throughout career in the solid and hazardous waste industry. Existing and prior roles have included responsibilities related to landfill operations, capital project management and budgeting, and environmental permitting and monitoring.

PROFESSIONAL EXPERIENCE

WASTE MANAGEMENT – ENVIRONMENTAL PROTECTION MANAGER **AUG 2013 – PRESENT**

Environmental Protection Manager at the Chemical Waste Management – Lake Charles RCRA Hazardous Waste Transfer, Storage and Disposal Facility located in Carlyss, LA. Job specific functions include employee training, Agency communication, oversight of the facility's environmental monitoring and compliance inspection programs, and development, implementation and management of the systems used to ensure compliance with all RCRA, TSCA, CERCLA, Clean Air and Clean Water requirements.

WASTE MANAGEMENT – LANDFILL OPERATIONS MANAGER **NOV 2011 – AUG 2013**

Landfill Operations Manager at the Waste Management Chastang Landfill located in Mt. Vernon, AL. Position required arrangement of customer and employee schedules to ensure smooth operations. Additional job functions included conducting regular safety meetings, developing innovative methods for reducing operational costs, preparing and accurately measuring site budgets, while acting as company liaison for local community relations.

REPUBLIC SERVICES – ENVIRONMENTAL SPECIALIST **NOV 2008 – NOV 2011**

Served as the Gulf Coast Area Environmental Specialist for Republic Services. Provided local and federal environmental guidance to various landfills, transfer stations and waste hauling divisions throughout the states of LA, MS, AL and FL. Initiated and assisted with permit renewals and modifications and effectively managed several environmental technicians. Completed the installation of a first of its kind phytoremediation landfill cap, utilizing landfill leachate.

EDUCATION and EXTRACURRICULAR INVOLVEMENT

University of Louisiana at Lafayette
Bachelor of Science
Major: Environmental and Sustainable Resources

Successful completion of the SWLA Economic Alliance –
Leadership Southwest Louisiana
2015 Graduating Class

Current Member of the Louisiana SW Chapter
Air and Waste Management Association
Member ID: 1167936

Volunteer
2016 Louisiana Flood Relief (United Way)

Coterie
ENVIRONMENTAL

S. HEATHER MCHALE, P.E.
PRINCIPAL

Heather has over 20 years experience in the permitting of combustion and incineration sources. She is a recognized expert in National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations, including the Hazardous Waste Combustor (HWC) NESHAP and the Industrial, Commercial, and Institutional Boilers and Process Heaters (ICIB/PH) NESHAP. She also has extensive experience in Resource Conservation and Recovery Act (RCRA) permitting. Heather has assisted numerous facilities in their efforts to comply with these regulations.

Expertise

- HWC NESHAP compliance
- ICIB/PH NESHAP compliance
- Commercial and Industrial Solid Waste Incineration (CISWI) compliance
- RCRA permitting and trial burns
- Multi-pathway risk assessment
- Combustion system and air pollution control design and operation

Project Experience

HWC NESHAP Compliance. Multiple Clients and Locations. Assisted numerous clients through the various stages of HWC NESHAP compliance. Projects typically begin with a comprehensive compliance evaluation or "gap analysis." The gap analysis identifies the activities that would be necessary to bring the unit into compliance with the regulations. Developed Notifications of Intent to Comply (NICs) and presented at public meetings. Developed comprehensive performance test (CPT) plans, continuous monitoring system (CMS) performance evaluation test (PET) plans, and quality assurance project plans (QAPPs) for submittal to regulatory agencies for review and approval. Assisted with negotiations to obtain approval of plans. Provided oversight and coordination for the CPTs, typically acting as the main contact for regulators, stack testing contractors, waste spiking contractors, and laboratories. Prepared CPT reports and Notifications of Compliance, assisting with negotiations to obtain final "finding of compliance" from the regulatory agencies. Prepared the required operating plans for each unit, including feedstream analysis plans, startup, shutdown, and malfunction (SSM) plans, operation and maintenance plans, and CMS performance evaluation plan. Developed operator training and certification programs and provided onsite training.

RCRA Permitting. Multiple Clients and Locations. Assisted numerous clients with RCRA permitting of incinerators and hazardous waste-fired boilers and furnaces. Provided on-site technical assistance for units during startup/shakedown periods. Developed RCRA trial burn

plans and risk burn plans submittal to regulatory agencies for review and approval. Assisted with negotiations to obtain approval of plans. Provided oversight and coordination for the test burns, typically acting as the main contact for regulators, stack testing contractors, waste spiking contractors, and laboratories. Prepared trial burn and risk burn reports, assisting with negotiations for final permit conditions. Developed Part B Permit applications. Developed site-specific multipathway risk assessment protocols and reports, in accordance with USEPA guidance.

ICIB/PH NESHAP Compliance. Multiple Clients and Locations. Assisted numerous clients through the various stages of ICIB/PH NESHAP compliance, before the court vacatur of the regulation. Performed detailed gap analyses to determine the activities that would be necessary to bring the units into compliance with the new regulations. Gap analyses included applicability determinations, evaluations of available emission data to determine compliance with emission standards, and reviews of the monitoring, reporting, and record keeping requirements. If necessary, performed pollution control feasibility studies. Provided recommendations on the most appropriate compliance options and strategies. Developed performance test plans and provided oversight during preliminary stack testing. Prepared the required operating plans for each unit, including fuel analysis plans, SSM plans, and site-specific monitoring plans.

Combustion and Air Pollution Control System Design and Engineering. Multiple Clients and Locations. Projects included air pollution control conceptual designs for new systems and retrofits. Prepared engineering reviews and feasibility studies, evaluating possible equipment designs and providing recommendations for new equipment and system modifications. Prepared engineering specifications for combustion and air pollution control equipment. Developed proprietary heat and material balance programs to evaluate design conditions and assist in sizing of equipment.

Computer Program Development. Developed several computer programs for the prediction of incineration and air pollution control system performance. Developed the computer programs used to size incineration systems, to determine emissions from systems, and to establish operating parameters for systems. Developed a computer program for emission inventories for Reasonable Available Control Technology and Title V projects. Developed computer program for multipathway risk assessment calculations, following the procedures of USEPA guidance document, *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*.

Title V Permitting. Multiple Clients and Locations. Prepared Title V permit applications for facilities in Delaware, Illinois, Kentucky, New Jersey, New York, Pennsylvania, and Wisconsin. Performed site surveys to develop emission inventories and to collect existing facility design, permitting, and operating data. Conducted database and literature searches to determine emission and control efficiency factors. Calculated actual and potential emissions for each source. Prepared a detailed description of facility operations and each emission source, including process flow diagrams. Determined the applicable regulatory requirements for the facilities, and performed compliance audits. Completed all the required state permit forms for the facility, and for each source, stack, piece of control equipment, and emission/process monitor.

Education, Training, and Registrations

- B.S., Chemical Engineering, Penn State University, 1988
- Registered Professional Engineer - Pennsylvania

Affiliations

- Air and Waste Management Association
- Program Advisory Committee for the International Conference on Incineration and Thermal Treatment Technologies (IT3)

Publications and Presentations

Gehring, M. E., and McHale, S. H. 2009. "The Curious Case of the CPT." Presented at the 28th International Conference on Incineration and Thermal Treatment Technologies. May 2009. Cincinnati, Ohio.

Gehring, M. E., and McHale, S. H. 2008. "Getting Out of HWC MACT – Is it Worth It?" Presented at the 27th International Conference on Incineration and Thermal Treatment Technologies. May 2008. Montreal, Quebec, Canada.

Gehring, M. E., and McHale, S. H. 2007. "HWC MACT Phase II Impacts - An Industry Survey." Presented at the 26th International Conference on Incineration and Thermal Treatment Technologies. May 2007. Phoenix, Arizona.

Gehring, M. E., and McHale, S. H. 2006. "So You Think You're In Compliance." Presented at the 25th International Conference on Incineration and Thermal Treatment Technologies. May 2006. Savannah, Georgia.

Gehring, M. E., McHale, S. H., and Whiteside, B. N. 2004. "EHS Management Systems and HWC MACT Compliance." Presented at the 23rd International Conference on Incineration and Thermal Treatment Technologies. May 2004. Phoenix, Arizona.

McHale, S. H. and Gehring, M. E. 2003. "HWC MACT from NIC to NOC - An Industry Survey." Presented at the 22nd International Conference on Incineration and Thermal Treatment Technologies. May 2003. Orlando, Florida.

McHale, S. H. and Gehring, M. E. 2002. "Workshop: Startup, Shutdown, and Malfunction Plans for Hazardous Waste Combustors." Presented at the 21st International Conference on Incineration and Thermal Treatment Technologies. May 2002. New Orleans, Louisiana.

McHale, S. H. and Budin, M. "Comparative Analysis: RCRA Trial Burn & HWC MACT Comprehensive Performance Test." Presented at the 2002 AWMA Hazardous Waste Combustor Specialty Conference. April 2002. St. Louis, Missouri.

Tidona, R. J. and McHale, S. H. "The HWC MACT Rule: What Does It Mean To Me?" Presented at the 16th International Conference on Incineration and Thermal Treatment Technologies. May 1997. Oakland, California.

Contributing author on "Introduction to Hazardous Waste Incineration," Second Edition, Section 3: Standards and Regulations, published in 2000.

Coterie
ENVIRONMENTAL

MEGHAN H. SKEMP
SENIOR PROJECT ENGINEER

Meghan has over 10 years of experience in combustion engineering, air pollution permitting, and environmental regulatory compliance and brings extensive hands-on perspective to solving challenging environmental problems. Her experience spans a multitude of environmental compliance issues and regulations in various manufacturing sectors. Working in the air pollution control industry has required Meghan to gain a strong understanding of multiple environmental regulations. Meghan also has extensive experience with general environmental compliance issues and reporting requirements in the majority of states.

Expertise

- HWC NESHAP compliance
- Subpart JJJJ NSPS and Subpart ZZZZ NESHAP compliance
- General air/environmental permitting and reporting
- Environmental Management Systems development and implementation

Project Experience

HWC NESHAP Compliance. Chemical and Explosives/Ammunition Manufacturing Clients in Multiple Locations. Provided assistance to a number of hazardous waste combustion facilities. Projects duties included assisting with quality assurance/quality control (QA/QC) of stack test data and assisting preparation of test plans and reports.

JJJJ NSPS and ZZZZ NESHAP Compliance. Natural Gas Compressor Stations in Multiple Locations. Assisted natural gas compressor stations with determining applicability and compliance requirements for Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines and Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Assisted facilities in determining compliance status and developing a comprehensive compliance plan for each NSPS/NESHAP in addition to their air permit requirements. Provided guidance and assisted in developing training presentations and regulatory compliance procedures. Prepared and submitted required NESHAP reports.

General Permitting and Reporting. Chemical Manufacturers, Tire Manufacturers, Automotive Industry, and Oil and Gas Industry facilities in Multiple Locations. Assisted clients with developing plan approvals, requests for determination, permits to construct, national pollutant discharge elimination system (NPDES) permits, storm water permits, Title V permits, state operating permits, and permit by rule documentation. Other projects included the preparation and submittal of annual emission inventories, preparation and submittal of deviation and

compliance reports, development of spill prevention, control, and countermeasure (SPCC) plans, storm water pollution prevention (SWPPP) plans, and providing general compliance assistance.

Environmental Compliance Management System Development and Implementation. Automotive industry, Tire Manufacturing industry and Midstream Oil industry facilities in Multiple Locations. Assisted with the development of environmental compliance management systems. Worked with clients in the development of procedures for environmental compliance tasks. Also, assisted in the environmental risk assessments and development of the key controls to ensure 100 percent compliance with all facility permits. Completed multiple facility audits to ensure compliance with all facility permits and environmental regulations. Was responsible for piloting the management systems and incorporating facility comments into the final products.

Education, Training, and Registrations

- B.E., Chemical Engineering, Vanderbilt University, 2006
- M.E., Environmental Engineering, Vanderbilt University, 2009
- Certified Engineer in Training – Tennessee
- 40-Hour HAZWOPER Certified

Affiliations

- Air and Waste Management Association

Appendix B:

CONTINUOUS MONITORING SYSTEMS PERFORMANCE EVALUATION TEST PLAN

WASTE MANAGEMENT

CHEMICAL WASTE MANAGEMENT, INC.

LAKE CHARLES FACILITY

HAZARDOUS WASTE OPERATING PERMIT EPA ID NO. LAD 000 777 201 AGENCY INTEREST NO. 742

CONTINUOUS MONITORING SYSTEMS PERFORMANCE EVALUATION TEST PLAN FOR THERMAL DESORPTION UNIT

NOVEMBER 2017

PREPARED BY:

pivotal engineering

Coterie ENVIRONMENTAL

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1.0 INTRODUCTION

This continuous monitoring systems (CMS) performance evaluation test (PET) plan is being submitted by Chemical Waste Management, Inc., (CWM) for the Thermal Desorption Unit (TDU) to be operated at the Lake Charles Facility. The TDU is subject to the Resource Conservation and Recovery Act (RCRA) standards codified in Title 40 Code of Federal Regulations (CFR) Part 264 Subpart X and Louisiana Administrative Code (LAC) Title 33 Part V Chapter 32. The applicable operating requirements for the TDU are specified in Section V.G of Hazardous Waste Operating Permit No. LAD000777201-0P-RN-MO-I.

This plan describes the CMS PET that CWM will conduct to demonstrate that the CMS associated with the TDU are operating in compliance with the standards presented in the permit. It is being submitted in accordance with Condition V.G.10.b.11 of the permit as part of the requirements for the comprehensive performance test (CPT) to demonstrate compliance with all applicable performance standards.

1.1 FACILITY OVERVIEW

The CWM Lake Charles Facility is a commercial hazardous waste treatment, storage, and disposal facility located on a 390-acre tract near Carlyss, Louisiana. John Brannon Road divides the facility into two parts: 270 acres to the west and 120 acres to the east. Incoming waste is currently treated as required and then disposed in Hazardous Waste Landfill Cell 8, located on the west side of John Brannon Road, adjacent to the other operational areas of the facility. CWM has added two new technologies to the current operations at the Lake Charles Facility. These new technologies offer CWM opportunities to treat waste and recover oil for resale. The two new systems consist of Oil Recovery Units and the TDU.

The street address of the CWM Lake Charles Facility is:

Chemical Waste Management, Inc.
Lake Charles Facility
7170 John Brannon Road
Carlyss, Calcasieu Parish, Louisiana 70665

All correspondence should be directed to the following facility contact:

Benjamin Dabadie
Environmental Manager
Chemical Waste Management, Inc.
Lake Charles Facility
7170 John Brannon Road
Sulphur, Louisiana 70665

Phone: 337-583-3676
Email: bdabadie@wm.com

1.2 Unit Overview

The TDU is designed to remediate organic hydrocarbon waste streams by thermally volatilizing their hydrocarbon constituents such that they are separated from the solid fraction, processed, and captured as a recovered organic material. The TDU consists of a solids feed system, an indirectly heated rotary drum, a Vapor Recovery Unit (VRU), and a Thermal Oxidizer Unit (TOU). Gases exit the TOU and flow through a water quench, a venturi scrubber, and a packed bed scrubber. An induced draft (ID) fan downstream of the packed bed scrubber pulls the gases through the TOU and quench/scrubber system and pushes them out the stack.

1.3 Regulatory Overview

The TDU is a thermal treatment unit, but it does not meet the definitions of an incinerator, boiler, or industrial furnace provided in 40 CFR § 260.10. The TDU does not use controlled flame combustion. Therefore, this unit is subject to 40 CFR Part 264 Subpart X and LAC 33:V.Chapter 32. 40 CFR § 264.601 and LAC 33:V.3203 require that Subpart X permit terms and provisions include those requirements of 40 CFR Part 264 Subparts I through O and Subparts AA through CC, 40 CFR Part 270, 40 CFR Part 63 Subpart EEE, and 40 CFR Part 146 that are appropriate for the miscellaneous unit being permitted. The Louisiana Department of Environmental Quality (LDEQ) has determined that some of the performance standards of 40 CFR Part 63 Subpart EEE, Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP), are appropriate for the TDU.

The permit requires that CWM use CMS to ensure that the TDU is operating in compliance with the performance standards at all times. These CMS are comprised of continuous process monitoring systems (CPMS) and continuous emissions monitoring systems (CEMS). The performance of the CMS must be evaluated in conjunction with the CPT. This evaluation is referred to as the CMS PET. CWM must document the protocol for the CMS PET in a CMS PET plan and must submit the plan for review and approval along with the CPT plan.

1.4 Continuous Process Monitoring Systems Overview

Various CPMS are required for the TDU to document compliance with the required OPLs. These monitors sample regulated operating parameters without interruption and evaluate the detector's response at least once every 15 seconds. The distributed control system (DCS) collects the data, calculates and records one-minute average (OMA) values for each required operating parameter, and calculates and records the appropriate rolling averages. Table 1-1 provides a description of each CPMS.

TABLE 1-1
CONTINUOUS PROCESS MONITORING SYSTEMS

MEASURED PARAMETER	INSTRUMENT DESCRIPTION
Hazardous waste feed rate	Flow meter
Rotary drum pressure	Pressure transmitter
Rotary drum temperature	Thermocouple and temperature transmitter
Thermal oxidizer unit temperature	Thermocouple and temperature transmitter
Flue gas flow rate	Flow meter
Venturi scrubber pressure drop	Differential pressure transmitter
Packed bed scrubber liquid flow rate	Flow meter
Paced bed scrubber liquid pH	pH transmitter and electrode

1.5 CONTINUOUS EMISSIONS MONITORING SYSTEMS OVERVIEW

In addition to monitoring process parameters, CWM is required to continuously monitor the carbon monoxide (CO) concentration in the stack gas to demonstrate compliance with the CO performance standard. CWM must also use an oxygen CEMS to continuously correct the reported CO concentration to seven percent oxygen. These analyzers must comply with the quality assurance (QA) procedures for CEMS contained in 40 CFR Part 266 Appendix IX.

CWM will utilize a non-dispersive infrared analyzer for CO. The analyzer will be configured with two spans: a zero to 200 parts per million by volume dry basis (ppmv dry) low-level span and zero to 3,000 ppmv high-level span. CWM will continuously correct these CO concentration measurements to seven percent oxygen. CWM will perform this correction with measurements of the stack gas oxygen concentration that will be collected by a paramagnetic analyzer. The analyzer will be configured with a single span of zero to 25 percent oxygen by volume on a dry basis.

1.6 PLAN PURPOSE AND SCOPE

With this CMS PET, CWM will demonstrate that the CMS associated with the TDU are operating in compliance with the permit requirements. More specifically, CWM will demonstrate that all CMS are installed such that they can obtain representative measurements of the process or emissions parameter. This will include verification of proper installation, operation, and calibration of each CMS used to demonstrate compliance with the permit.

This CMS PET plan includes both an internal and external QA program. The internal QA program specifies the procedures that will be used to verify correct installation, calibration, and operation of each CMS device prior to the CPT. The external QA program provides information on data validation and documentation measures for the CMS PET.

The remaining sections of this plan are organized as follows:

- Section 2 provides a summary of the CMS performance evaluations that will be performed (internal QA program) and presents a schedule for the CMS PET;
- Section 3 provides information on the data validation and reporting procedures (external QA program); and
- Attachment A provides detailed procedures and recording forms for the CMS PET.

1.7 Document Revision History

The original version of this plan was submitted in November 2017. The nature and date of any future revisions will be summarized in Table 1-2.

Table 1-2
Document Revision History

Revision	Date	Description of Changes
0	November 2017	Original submittal

2.0 INTERNAL QUALITY ASSURANCE PROGRAM

This internal QA program specifies the procedures that will be used to conduct the CMS PET. This section provides an overview of the required program and the anticipated test schedule. Details on the internal QA program activities are provided on the CMS PET checklists in Attachment A.

2.1 INSTALLATION CHECKS

During the CMS PET, installation checks will be performed on each of the permit-required CMS to verify that they are installed in accordance with manufacturer recommendations and plant internal standards. The checklists in Attachment A provide the installation checks that will be performed for each CMS. Examples of the installation checks that will be performed include verifying proper orientation of the CMS, checking the electrical wiring, and looking for evidence of corrosion or excessive buildup.

2.2 OPERATIONAL CHECKS

Operational checks will also be performed on each of the CMS to verify that they are operating properly. The operational checks specific to each CMS are detailed on the CMS PET checklists in Attachment A. These operational checks will vary depending upon the diagnostic capabilities of the instrument. For those CMS equipped with internal diagnostic test routines, CWM will activate the routine, if necessary, and will review the instrument display for error codes after the diagnostic test is complete. Absent such a diagnostic routine, CWM will simply observe the CMS during normal unit operation and will confirm that changes are registered with known changes in process conditions.

For the CEMS, a relative accuracy test audit (RATA) will be conducted following the RATA procedures described in 40 CFR Part 266 Appendix IX for all analyzers. Concurrent with the RATA, the facility will conduct a seven-day drift test, which is intended to demonstrate the stability of the CEMS calibration over time.

2.3 CALIBRATION CHECKS

In addition to verifying proper installation and operation of each CMS, CWM will also check the calibration of each CMS during the CMS PET. CWM will perform complete calibrations of the CMS if the calibration checks indicate the potential for an unacceptable amount of bias in the instrument readings. The checklists in Attachment A provide information on the instrument-specific calibration procedures.

For the CEMS, CWM will assess the daily calibration and zero drift of each CEMS. During the daily calibration check, the stack gas sample stream is temporarily turned off, and calibration gases are injected into each analyzer. A zero level calibration gas is used to test the baseline response of each CEMS. A span gas is then used to test the response of the instrument at the high end of its range. This assessment is performed automatically each day by the CEMS and will continue during the CMS PET.

Should any adjustments to the CEMS be required, they will be performed manually by CWM following site-specific procedures.

2.4 INTERNAL QUALITY ASSURANCE PROGRAM SCHEDULE

The activities designated for the internal QA program will require careful planning and substantial time to complete. To ensure completion prior to the CPT, CWM will perform the CMS PET in the months prior to the CPT. All tasks will be initiated no less than two weeks prior to the CPT to allow time for corrective actions to be implemented in the event that any installation, calibration, or operation check is not successful.

3.0 EXTERNAL QUALITY ASSURANCE PROGRAM

The external QA program includes those procedures utilized to validate the data collected during the CMS PET and to document the CMS PET activities. The primary goal of the external QA program is proper collection and organization of test data followed by clear and concise reporting of the test results. Details on the external QA program for this CMS PET are provided in this section.

3.1 TEST PERSONNEL

The CMS PET activities described in this test plan will be performed by CWM instrumentation staff or qualified contractors. The personnel involved in each program element will be documented on the CMS PET checklists in Attachment A or will be detailed in the contractor's test logs and report.

3.2 REDUCTION OF TEST DATA

The data collected during the CMS PET will be compiled following test completion and will be included in the CMS PET report. Extreme care will be exercised by test personnel to ensure that all manually recorded data are written accurately and legibly. To help increase the quality and uniformity of the test data, all CMS PET activities will be documented on pre-printed data recording forms. Examples of these checklists are provided in Attachment A.

3.3 VALIDATION OF TEST RESULTS

After the CMS PET is performed, CWM will review the data recorded by the test personnel. When evaluating the data, CWM will make sure that the specified procedures were followed, the necessary forms were completed, and the results of each CMS installation, operation, and calibration check were successful. A preliminary review of the test results will be conducted following test completion prior to the CPT. A final validation of the test results will be performed prior to submittal of the CMS PET report.

3.4 REPORTING OF TEST RESULTS

The results of the CMS PET will be compiled and will be summarized in the CMS PET report, which will be prepared by a qualified contractor. The CMS PET report will provide the result of each CMS installation, operation, and calibration check and will also include the completed CMS PET checklists and/or contractor test report. The CMS PET report will be submitted as an appendix to the CPT report for the TDU.

Attachment A:

EXAMPLE CONTINUOUS MONITORING SYSTEMS PERFORMANCE EVALUATION TEST FORMS

CMS PET LOG

MEASURED PARAMETER	DEVICE TYPE	CMS PET COMPLETED?
Hazardous waste feed rate	Flow meter	☐
Rotary drum pressure	Pressure transmitter	☐
Rotary drum temperature	Thermocouple and temperature transmitter	☐
Thermal oxidizer unit temperature	Thermocouple and temperature transmitter	☐
Flue gas flow rate	Flow meter	☐
Venturi scrubber pressure drop	Differential pressure transmitter	☐
Packed bed scrubber liquid flow rate	Flow meter	☐
Paced bed scrubber liquid pH	pH transmitter and electrode	☐
Stack gas carbon monoxide concentration	Non-dispersive infrared analyzer	☐
Stack gas oxygen concentration	Paramagnetic analyzer	☐

CMS PET Checklist for Hazardous Waste Feed Rate
Flow Meter
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Make sure that the flow meter is clean and undamaged and that no process leaks are evident.		
Confirm that the physical mounting, orientation, and operating environment of the flow meter are consistent with appropriate manufacturer specifications.		
Ensure that the flow meter's terminal housing contains no moisture and shows no evidence of corrosion.		
Verify that all sensor, transmitter, and control system connections are made properly, clean, and in good repair.		
Make sure that all electrical wiring conforms to plant or manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Review the flow meter display for error indications and complete repairs or maintenance as needed.		
Calibration Check		
Task	**Date Completed**	**Comments**
Check the calibration of the flow meter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET Checklist for Rotary Drum Pressure
Pressure Transmitter
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Make sure that the transmitter is clean and undamaged and that no process leaks are evident.		
Confirm that the physical mounting, orientation, and operating environment of the transmitter are consistent with appropriate manufacturer specifications.		
Ensure that the transmitter's terminal housing contains no moisture and shows no evidence of corrosion.		
Verify that all transmitter and control system connections are made properly, are clean, and are in good repair.		
Make sure that all electrical wiring conforms to appropriate plant and manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Review the transmitter display for error indications and complete repairs or maintenance as needed.		
Calibration Check		
Task	**Date Completed**	**Comments**
Check the calibration of the transmitter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET CHECKLIST FOR ROTARY DRUM TEMPERATURE THERMOCOUPLE AND TEMPERATURE TRANSMITTER

TAG NUMBER _____

INSTALLATION CHECK		
TASK	**DATE COMPLETED**	**COMMENTS**
Check the physical mounting, orientation, and operating environment of the temperature element and transmitter and make sure that they conform to appropriate manufacturer specifications.		
Verify that all thermocouple, transmitter, and control system connections are made properly, are clean, and are in good repair.		
Make sure that all electrical wiring conforms to appropriate plant and manufacturer recommended practices.		
OPERATIONAL CHECK		
TASK	**DATE COMPLETED**	**COMMENTS**
Initiate an instrument self-test, check for displayed error codes, and complete repairs or maintenance as needed.		
CALIBRATION CHECK		
TASK	**DATE COMPLETED**	**COMMENTS**
Replace the thermocouple if necessary.		
Check the calibration of the transmitter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

ADDITIONAL CALIBRATION SHEETS ATTACHED? **YES:** _____ **NO:** _____

COMPLETED BY: _____

CMS PET Checklist for Thermal Oxidizer Unit Temperature Thermocouple and Temperature Transmitter

Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Check the physical mounting, orientation, and operating environment of the temperature element and transmitter and make sure that they conform to appropriate manufacturer specifications.		
Verify that all thermocouple, transmitter, and control system connections are made properly, are clean, and are in good repair.		
Make sure that all electrical wiring conforms to appropriate plant and manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Initiate an instrument self-test, check for displayed error codes, and complete repairs or maintenance as needed.		
Calibration Check		
Task	**Date Completed**	**Comments**
Replace the thermocouple if necessary.		
Check the calibration of the transmitter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET Checklist for Flue Gas Flow Rate
Flow Meter
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Make sure that the flow meter is clean and undamaged and that no process leaks are evident.		
Confirm that the physical mounting, orientation, and operating environment of the flow meter are consistent with appropriate manufacturer specifications.		
Ensure that the flow meter's terminal housing contains no moisture and shows no evidence of corrosion.		
Verify that all sensor, transmitter, and control system connections are made properly, clean, and in good repair.		
Make sure that all electrical wiring conforms to plant or manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Review the flow meter display for error indications and complete repairs or maintenance as needed.		
Calibration Check		
Task	**Date Completed**	**Comments**
Check the calibration of the flow meter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET Checklist for Venturi Scrubber Pressure Drop
Differential Pressure Transmitter
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Make sure that the transmitter is clean and undamaged and that no process leaks are evident.		
Confirm that the physical mounting, orientation, and operating environment of the transmitter are consistent with appropriate manufacturer specifications.		
Ensure that the transmitter's terminal housing contains no moisture and shows no evidence of corrosion.		
Verify that all transmitter and control system connections are made properly, are clean, and are in good repair.		
Make sure that all electrical wiring conforms to appropriate plant and manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Review the transmitter display for error indications and complete repairs or maintenance as needed.		
Calibration Check		
Task	**Date Completed**	**Comments**
Check the calibration of the transmitter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET Checklist for Packed Bed Scrubber Liquid Flow Rate
Flow Meter
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Make sure that the flow meter is clean and undamaged and that no process leaks are evident.		
Confirm that the physical mounting, orientation, and operating environment of the flow meter are consistent with appropriate manufacturer specifications.		
Ensure that the flow meter's terminal housing contains no moisture and shows no evidence of corrosion.		
Verify that all sensor, transmitter, and control system connections are made properly, clean, and in good repair.		
Make sure that all electrical wiring conforms to plant or manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Review the flow meter display for error indications and complete repairs or maintenance as needed.		
Calibration Check		
Task	**Date Completed**	**Comments**
Check the calibration of the flow meter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET Checklist for Packed Bed Scrubber Liquid pH
pH Transmitter and Electrode
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Confirm that the physical mounting, orientation, and operating environment of the transmitter are consistent with appropriate manufacturer specifications.		
Verify that all analyzer and control system connections are made properly, are clean, and are in good repair.		
Make sure that all electrical wiring conforms to appropriate plant and manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Initiate a transmitter self-test, check for displayed error codes, and complete repairs or maintenance as needed.		
Calibration Check		
Task	**Date Completed**	**Comments**
Check the calibration of the transmitter following site-specific or manufacturer's procedures.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET Checklist for Stack Gas Carbon Monoxide Concentration
Non-Dispersive Infrared Analyzer
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Confirm that the physical mounting and operating environment of the CEMS is consistent with appropriate manufacturer specifications.		
Ensure that all filters are clean and free from residue buildup.		
Perform a leak test on the sample and purge lines following plant or manufacturer recommended procedures.		
Confirm that the calibration gases are properly connected to the unit, the supply lines are pressurized, and regulators are set to the proper pressure.		
Make sure that the flow rate of sample gas to the analyzer is within the range recommended by the manufacturer.		
Make sure that all electrical wiring conforms to plant or manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Conduct a relative accuracy test audit.		
Conduct a seven-day calibration drift test.		
Calibration Check		
Task	**Date Completed**	**Comments**
Purge the analyzer with calibration gas. Adjust the analyzer as necessary until readings are within an acceptable difference of the calibration gas value. Analyzer should be calibrated at the zero, low, and high span levels.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____

CMS PET Checklist for Stack Gas Oxygen Concentration
Paramagnetic Analyzer
Tag Number _____

Installation Check		
Task	**Date Completed**	**Comments**
Confirm that the physical mounting and operating environment of the CEMS is consistent with appropriate manufacturer specifications.		
Ensure that all filters are clean and free from residue buildup.		
Perform a leak test on the sample and purge lines following plant or manufacturer recommended procedures.		
Confirm that the calibration gases are properly connected to the unit, the supply lines are pressurized, and regulators are set to the proper pressure.		
Make sure that the flow rate of sample gas to the analyzer is within the range recommended by the manufacturer.		
Make sure that all electrical wiring conforms to plant or manufacturer recommended practices.		
Operational Check		
Task	**Date Completed**	**Comments**
Conduct a relative accuracy test audit.		
Conduct a seven-day calibration drift test.		
Calibration Check		
Task	**Date Completed**	**Comments**
Purge the analyzer with calibration gas. Adjust the analyzer as necessary until readings are within an acceptable difference of the calibration gas value. Analyzer should be calibrated at the zero, low, and high span levels.		

*Note: Installation and operational checks should be conducted prior to instrument calibration.

Additional calibration sheets attached? **Yes:** _____ **No:** _____

Completed by: _____